AXD - AXL - AXS - AXS12 - AXS6 - Aastra 5000 Server

Installation and Maintenance Manual

AMT/PTD/PBX/0058/4/6/EN
01/2011

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1 Introduction

1.1 Purpose of this document

The Aastra 5000 documentation for installers comprises several manuals covering all aspects of system installation, use and maintenance, namely:

- An Aastra Management Portal (AMP) manual
- An installation and maintenance manual.

The purpose of this document called "Installation and maintenance manual" is to describe Aastra 5000 series products, and provide the information required for their installation and maintenance at 0 level.

This document is broken down as follows:

- Chapter 0 : Préliminaires
- Chapter 1 : Introduction

  This chapter gives general information (abbreviations, definitions).
- Chapter 2 : Présentation

  This chapter defines the various products in the Aastra 5000 range.
- Chapter 3 : Description et caractéristiques d'un PBX

  This chapter gives the following iPBX-related information:
  - Main characteristics (physical, electrical, environment, interfaces, connection capacities, dimensions),
  - Physical description (structure, components)
  - Configuration rules, specifying the possible slots for and restrictions on the various Aastra 5000 range expansion cards
  - Functional description, presenting the functions provided by the iPBX, this description is based on a functional diagram.
- Chapter 4 : Description des sous-ensembles

  This chapter provides a full description of each of the subassemblies in an iPBX:
  - Functional description
  - Physical description (connectors, indicators, push-buttons)
  - Possible hardware configuration (microswitches, jumpers)
  - Installation and wiring

- Chapter 5 : Présentation des équipements périphériques

  This chapter presents the type of peripheral device which can be connected to the iPBXs.

- Chapter 6 : Installation

  This chapter describes the operations used to implement, configure, and make an iPBX operational.

- Chapter 7 : Maintenance

  This chapter describes iPBX maintenance operations. It describes in particular:

  - Maintenance in general: safety instructions, organisation of maintenance, list of support equipment, etc.
  - The preventive maintenance operations to be performed periodically on the equipment
  - Test procedures
  - How to replace the subassemblies.

- Chapter 8: Installing and using the IPS card

  This chapter contains the reference for the special volume that describes how to install and use the NAT access point services of the IPS card.

- Chapter 9: : Planches

  This chapter contains the functional maps.

- Chapter 10 : Installing Aastra 5000 Server

  This chapter describes the installation of Aastra 5000 Server.

- Chapter 11 : Appendices

  Certain specific procedures or additional information are contained in this chapter.

1.2 Target audience for the document

This document is meant for:

- Installers of A5000 series iPBXs
- Maintenance operators of A5000 series iPBXs
- Trainers.

1.3 Reference documents

[1] Aastra Management Portal AXD-AXL-AXS-AXS12-A5000 Server – Operating manual
AMT/PTD/PBX/0080

[2] Multi-site Management
AMT/PTD/PBX/0081

[3] Installation Manual Kit B0F3
AMT/PTD/PBX/0059

[4] Aastra Management 7450 (AM 7450) Installation manual
AMT/PTD/NMA/0040

[5] Aastra Management 7450 (AM 7450) User manual
AMT/PUD/NMA/0003

[6] Installation and Implementation Manual for "Integrated DECT Service"
AMT/PTD/PBX/0020

[7] Installation and Implementation Guide for MUM Multiplexer card PS8913A

[8] M7xx digital set and i7xx IP set Installation manual
AMT/PTD/TR/0001

[9] Aastra i2052 Installation manual
AMT/PTD/TR/0002

[10] Aastra i2070 Installation manual
AMT/PTD/TR/0003

[11] “IP DECT” Installation and implementation manual
AMT/PTD/PBX/0062/1/3/EN

[12] Red Hat OS installation manual
AMT/PTD/NMA/0041

[13] Installation and operating manual for SIP access point, NAT and TFTP services
AMT/PTD/PBX/0064

[14] Installation manual for redundancy and double attachment on A5000 Server
AMT/PTD/PBX/0083

[15] Installation manual Aastra 53xxip and Aastra 67xxi Aastra 53xx sets
AMT/PTD/TR/0014

[16] Manuel de Mise en Oeuvre Séparation des Flux téléphonie et Administration
AMT/PTD/PBX/0101

1.4 Abbreviations

ACD	Automatic Call Distribution
AM7450	Aastra Management 7450
LSB	Logical Security Block
IVB	Integrated Voice Box
CSTA	Computer Supported Telecommunications Applications
CTI	Computer-Telephone Interface
PTC	Positive Temperature Coefficient
DECT	Digital Enhanced Cordless Telephony
DISA	Direct Inward System Access
DTMF	Dial Tone multi frequency
ESF	Extended Single Frame
DCTE	Data Communication Terminal Equipment
DTE	Data Terminal Equipment
FIFO	First In First Out
HDLC	High-level Data Link Control
IP	Internet Protocol
TS	Time Slot
LAN	Local Area Network
LCR	Least Cost Routing
TL	Tie-Line
PLL	Permanent Logical Link
MEVO	MEssagerie VOcale (Voice mail)
MIB	Management Information Base
PCM	Pulse and Coding Modulation
MOVACS	Multi-switch Original Virtual Addressing Communications System
NC	Not connected
NTP	Network Time Protocol
iPBX	IP Private Branch eXchange
MMI	Man-Machine Interface
ISDN	Integrated Services Digital Network
ROHS	Restriction Of the use of certain Hazardous Substances in electrical and electronic equipment
PSTN	Public Switched Telephone Network
DID	Direct Inward Dialling
SF	Single Frame
SNA	Systems Network Architecture

IVS	Integrated Voice Server
DLT	Digital Link Terminal
DNT	Digital Network Terminal
TWP	Telephony Web Portal
DAU	Delocated Acquisition Unit
CPU	Central Processing Unit
UCV	Central Processing Unit card
VPIM	Voice Profil for Internet Mail
VTI/XML	Virtual Terminal Interface / eXtended MarKup Language
VU	Version Upgrade
WAN	Wide Area Network

1.5 Terms and expressions

Aastra X series : This term refers to all AXS, AXL and AXD PBXs.

Aastra 5000 or A5000 Server: Telephone switching system hosted on a PC running with Linux Redhat

AXS, AXL, AXD: A5000 series physical gateways

Aastra Management 7450 or AM7450: Systems management centre

1.6 Definition

Synchronous announcements

Announcements synchronised with start of call.

ACD

Automatic call distribution used to optimise the number of replies and response time relating to the number of operator sets in a single or multisite installation.

dect base stations

Base stations providing radio coverage over a given zone, and offering several simultaneous communication channels with wireless telephones.

B-channel

Speech or data transmission channel in circuit mode.

D-channel

Data transmission channel in packet mode.

Signalling channel

Virtual link between 2 sites, for conveying MOVACS signals when setting up a telephone call. Used for proprietary signalling and system data (billing tickets, management centre, directory).

BTX card

Charging buffer card used to print detailed telephone traffic reports.

CA1 card

Asynchronous serial interface card used for connecting 4 data transmission terminals.

CLX card

Interface card with a microprocessor having access to a memory area on the UCV card through the system bus. This category includes network access cards.

CP1 card

Circuit/Packet card used to connect to an X25 network for sending data in packet mode over a B channel in a Numeris link.

CS1 card

Synchronous serial interface card, used to connect 2 X25 synchronous interfaces.

DTOC card

Busy tone detection daughter card, fitted on LR4 card.

FTXA card

Detection card 50 kHz for billing pulses, fitted on LR4 card.

FTXC card

12 kHz or 16 kHz detection card for billing pulses, fitted on LR4 card.

EXT1-S card

Card to which all the network and subscriber trunks of the Aastra XS cabinet are connected.

EXT1-S12 card

Card to which all the network and subscriber trunks of the Aastra XS12 cabinet are connected.

EXT1-S6 card

Card to which all the network and subscriber trunks of the Aastra XS6 cabinet are connected.

Equipment card

Interface card with microprocessor and access to the UCV card memory. This category comprises the subscriber cards and cards for connecting with tie lines.

IPS card

Aastra XS, XL and XD expansion card. This card acts like an SIP access point which enables the iPBXs to offer connections to SIP terminals, to alternative SIP operators (SIP trunk), or to remote SIP servers.

LA16X card

Interface card used for connecting 16 analogue sets.

LA16X-8 card

Interface card used for connecting 8 analogue sets.

LA8 card

Interface card used for connecting 8 analogue sets.

LD4 card

4 S0/T0 ISDN interface card used to connect to 2- or 4-channel DECT base stations, or to ISDN terminals (S0), or to an ISDN BRI interface (T0).

LD4NX card

4 S0/T0 ISDN interface card used to connect to 2- or 4-channel DECT base stations, or to ISDN terminals (S0), or to an ISDN BRI interface (T0). The LD4X mode allows you to deploy additional functions by removing a specific jumper.

LH8 card

Interface card used for connecting 8 hotel analogue sets.

LH16X card

Interface card used for connecting 16 hotel analogue sets.

LH16X-8 card

Interface card used for connecting 8 hotel analogue sets.

LI1 card

Interface card used in connecting 2 tie lines.

LM8 card

Interface card used for connecting 4 analogue sets and 4 digital sets.

LN16X card

Interface card used for connecting 16 digital sets.

LN16X-8 card

Interface card used for connecting 8 digital sets.

LN8 card

Interface card used for connecting 8 digital sets.

LR4 card

Interface card used for connecting 4 telephone lines in analogue mode.

LT2 card

Primary rate S2/T2 ISDN access trunk card or PCM digital trunk card.

MUM card

Voice / Fax multiplexer/demultiplexer card.

PT2 card

TCP/IP-X25 and voice over IP gateway card used for connection to a 10/100 Mbits

Ethernet LAN.

RJ cards

Expansion cards in RJ45 format; these cards are fitted with a front panel.

RUCV card

Bus interface card of an expansion cabinet providing the interface between the UCV card of the main cabinet and the expansion cards in an expansion cabinet.

RUCV/RUCV-D

Bus interface card of an expansion cabinet providing the interface between the UCV-D card of the main cabinet and the expansion cards in an expansion cabinet.

UCV card

Central Processing Unit card of an Aastra XS/XL iPBX.

UCV-D card

Central Processing Unit card of an Aastra Duplicated iPBX (AXD).

CSTA

Communication standard enabling telephone and computer applications to communicate in client/server mode. Connection with the server is via either an X25 or TCP/IP link.

DISA (Direct Inward System Access)

Service used to provide users outside the installation with the same features as a set connected directly to the iPBX.

Ethernet

Local area network (LAN) protocol using twisted (10 base T) or coaxial cable (10 Base 2 or 10 base 5) and which allows transfer at 10 Mbps in its basic version and 100 Mbps in its fast version (Fast Ethernet).

TS

Time slot for a frame carried over a PCM link, which can be used notably as a medium for voice or data communication.

LCR

Least Cost Routing service. Based on the number requested, this service provides automatic selection of the optimum route, according to the distances and billing zones or caller rights.

The **extended LCR** service is used to take into account the pricing offers of the various operators.

iPBX

Private branch exchange: electronic device used to automatically route a company's internal and external communications.

Class set

Name given to an analogue set connected to a line on which detection has been authorised for the call's number, date and time. The rights are given to the iPBX from a management console (AMP).

HDLC

Data link control protocol.

Signalling

Exchange of information using supervision signals or transmission of DTMF code. Signalling concerns the transmission of the communication or the called party identification.

Basic or extended RON/TRON signalling

Signalling method in which information is transferred between the switching and transmission equipment through specialised wires, called TRON (transmission by the iPBX) and RON (reception by the iPBX).

RON (ReceptiON) and TRON (TRansmissiON) signals are conveyed over specific wires transmitting a status or a pulse in each direction; it is basic when it uses a single RON wire and a single TRON wire, and extended when it includes 2 (or more).

VU

Conversion tools (**V**ersion **U**pgrade). VUs are run to transmit data in the form of a new software packet.

X25

Protocol for the connection between a DTE and a DCE, or between two DTEs for transmitting data in packet mode.

2 Présentation

2.1 Presentation of Aastra X series products

Aastra X series products include a set of homogeneous and scalable systems used to manage 8 to 1000 subscribers, based on a single software package and a range of subassemblies (cards) common to all products in the range.

Aastra Duplicated PBX (Aastra XD) is a secure upgrade of Aastra XS/XL PBXs. It is used to secure the functions of the iPBX by duplicating the CPU card, some integrated services and power supply. This security guarantees 100% iPBX resources availability.

Aastra XD exists in form of one, two or three cabinets used to manage 8 to 1000 extensions. Like the other products, it is based on a single software application and a range of subassemblies common to all Aastra products.

Aastra XD can be configured in three different ways:

- Simplex configuration, comprising a single UCV-D CPU card in the main cabinet, a single RUCV-D card in the expansion cabinet(s), and a single power supply module per cabinet. In this case, none of its elements is duplicated.
- Simplex configuration, with secure power supply, comprising a single UCV-D CPU card in the main cabinet, a single RUCV-D card in the expansion cabinet(s), and two power supply modules per cabinet.
- Duplex configuration with two UCV-D CPU cards in the main cabinet, two RUCV-D cards in the expansion cabinet(s), and two power supply modules per cabinet.

The Aastra X series is used for connecting to traditional analogue or digital communication networks or using the IP protocol.

It provides a high level of integration of telephone services (messaging, IVS, answering machine, announcements, etc.) and remote management (IP, HDLC, downloading).

It is based on total operation (monitoring, configuration, downloading) of the iPBXs through remote management.

Aastra X series comprises four products:

- Aastra XD (AXD)
- Aastra XL (AXL)
- Aastra XS (AXS)
- Aastra XS12 (AXS12)
- Aastra XS6 (AXS6)

These iPBXs are differentiated mainly by their management and switching power:

- 1000 physical extensions for an AXD
- 1000 physical extensions for an AXL

- 500 physical extensions for an AXS
- 500 physical extensions for an AXS12

AXD, AXL, AXS, AXS12 and AXS6 iPBXs can be fitted with a broad range of expansion cards, used to configure the iPBXs optimally in order to meet your needs:

- IP PBXs
- Trunk gateways (gateways optimising the resources actually used at a given time),
- Voice gateways (voice gateways: resources used to set up a voice circuit between two sites on a network).

Aastra X series is compatible with an already existing multi-site configuration as of software release R4.1 and R4.2, with functional restrictions on inter-operation.

Aastra XD was designed to optimise:

- The available iPBX resources
  - CPU card duplication
  - the duplication of certain integrated services
  - power supply duplication.

Aastra XD also benefits from the following enhancements, which triggered the designing of the Aastra XS/XL range:

- the hardware installation time:
  - All the cards in the AXS and AXL cabinets are rackable.
  - The new cards are "plug and play".
- It is possible to move on around site thanks to the following features:
  - secure software downloading
  - remote management of voice services
  - remote operation.

2.2 Functional and physical architecture of the iPBXs

2.2.1 Aastra XD

The architecture of Aastra XD is as follows:

- A main cabinet including:
  - one (simplex configuration) or two main UCV-D cards (duplex configuration), the core of the iPBX, mainly perform tasks such as process management, switching and interfacing with the management devices; it includes:
    - the basic equipment of an iPBX
    - management ports
  - an IUCV-D card which supports the system's external connections
  - if necessary, expansion cards. These cards interface with the communication devices and connected networks. They are added to increase the connection possibilities of:
  - One or two ADS350XD or ADS300XD power supply modules:
    - one (ADS350XD or ADS300XD) power supply module and one VADS ventilation module, in case of simplex configuration
    - two ADS350XD or ADS300XD power supply modules, for a simplex configuration with secure power supply, or duplex
- One or two expansion cabinets, optionally each linked by a wire to the main cabinet with:
  - one card (simplex configuration) or two RUCV-D cards (duplex configuration) installed instead of UCV-D card(s)
  - additional expansion cards
  - one or two ADS350XD or ADS300XD power supply modules:
    - one (ADS350XD or ADS300XD) power supply module and one VADS ventilation module, in case of simplex configuration
    - two ADS350XD or ADS300XD power supply modules, for a simplex configuration with secure power supply, or duplex

Aastra XD accepts only one physical format of expansion cards: a card with a front panel (RJ card) fitted with RJ45 connectors.

The CPU card of Aastra XD (UCV-D) exists in a single RJ45 format.

All products in the range have the same width (standard 19''), colours and materials.

2.2.2 Aastra XS/XL

Aastra XS/XL iPBXs are based on a common architecture:

- A main cabinet including:
  - The CPU card (UCV), the core of the iPBX, handles basically processing and switching management tasks; it contains the basic equipment of an iPBX.
  - The EXT1-S cards for AXS and EXT1-S12 for AXS12 and EXT1-S6 for AXS6 basically provide the interface with the management devices; they have management ports.
  - Possibly expansion cards for AXS, AXS12, AXS6 and AXL PBXs. These cards interface with the communication devices and connected networks. They are added to increase the connection possibilities of:
- An optional expansion cabinet for AXS and AXS12 PBXs and up to two for AXL, each one connected by a cable to the main cabinet with additional expansion cards.

AXL and AXS/AXS12/AXS6 PBXs accept an expansion card fitted with a front panel (RJ card) for RJ45 connectors.

The analogue and digital equipment interfaces available on the front panel of the EXT1-S card in the AXS PBX, EXT1-S12 card in the AXS-12 PBX and the EXT1-S6 card in the AXS-6 PBX are in (RJ45) format.

All products in the range have the same width (standard 19''), colours and materials.

2.3 Overview of the functions

Aastra XS/XL/XD platforms basically:

- Provide temporary links between subscriber lines, various types of networks, and possibly other platforms or private installations
- Handle subscriber services
- Secure the device operation (Aastra XD only).

To this end, they perform the following functions:

- Managing access to various types of networks:
  - RTCP
  - ISDN
  - X25
  - Ethernet
- Managing access to various types of peripheral devices:
  - digital sets
  - analogue sets
  - IP sets
  - SIP set
  - computer terminals
  - DECT base stations
- Managing access to other platforms (multi-site access) through interfaces:
  - PCM (E1/T1)
  - Ethernet network
  - analogue line
  - tie line
- Call switching:
  - circuit switching
  - packet switching
- Signal generation and detection
- Subscriber services:
  - Voice mail server
  - directory server
  - answering machine
  - automated attendant
  - storing the information and data required for connected devices (voice messages, directories, etc.)
- Internal management:
  - operating and supervising the peripheral devices and networks connected to the system, together with Aastra Management Portal
  - collecting internal or external alarms
  - managing expansion cards (AXD, AXL, AXS, AXS12 and AXS6 PBXs):

- reset and supervision
- storing the information and data required for card operations

- Managing duplicated services (Aastra XD only):
  - duplication of power supply (switchover)
  - duplication of CPU cards:
    - switchover
    - duplication of hardware functions
    - data synchronisation
    - software synchronization
  - duplication of the integrated answering service
  - duplication of the voice mail system
  - duplication of the integrated charging services
  - duplication of IP network connections.

3 DESCRIPTION ET CARACTÉRISTIQUES D'UN PBX

3.1 Physical description

3.1.1 General description of AXD iPBXs

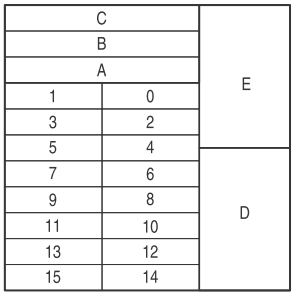
An Aastra XD (AXD) iPBX in simplex or duplex configuration consists of one main cabinet and, if necessary, one expansion cabinet (version A2XD) or two expansion cabinets (version A3XD).

The main cabinet and expansion cabinets are in the form of a 19" metal cabinet, 10 U, in which the subassemblies required for the iPBX to operate are inserted.

The cabinets are adapted to 19" racks using securing brackets. They can also simply be placed on the floor or on a piece of furniture.

The cabinets can be stacked, but not installed next to each other to prevent blocking the air inlets located on the left hand side.

The main cabinet and expansion cabinets have the same structure, the slot identification is indicated by a diagram on the power suply module:



- One slot **A**, located in the upper part of the cabinet:
  - reserved for the main UCV-D (A) card in the main cabinet
  - reserved for the RUCV-D (A) card in the expansion cabinet
- One slot **B**, located in the upper part of the cabinet:
  - reserved for the secondary UCV-D (B) card in the main cabinet in a duplex configuration
  - reserved for the blanking plate in expansion cabinets.
- One slot **C**, located in the upper part of the cabinet:
  - reserved for the IUCV-D card in the main cabinet
  - reserved for the blanking plate in expansion cabinets.
- One slot **D** on the right side, in the lower part of the cabinet, reserved for the power

supply module

- One slot **E** on the right side, in the upper part of the cabinet, reserved for one ventilation module or a second power supply module
- 2 rows of 8 slots (**1** to **16** and **2** to **14**) in the main cabinet and expansion cabinet:
  - The first 14 slots are reserved for plug-in expansion cards along the guides on the sides of the cabinet (RJ45 format).
  - The last two slots are reserved for the BTX expansion cards.
  - In the expansion card(s), the 16 slots are reserved for the plug-in expansion cards along the guides on the side of the cabinet (RJ45 format).
  - RJ cards are locked on the front panel of the cabinet, blanking plates must be fitted in unused slots.
- Air inlets/outlets for ventilating the elements in the cabinet are available on:
  - the left-hand side: fresh air inlet
  - rear panel: hot air outlet.

The external cables are connected on the front panel of the subassemblies which can be inserted in the cabinet (main card, expansion cards, mains unit).

Connections to the expansion cabinets and to an aoptional battery are made at the back of the cabinet (see Figure 3.2 and Figure 4.12 to 4.18).

The list of the subassemblies that can be inserted in the main cabinet and expansion cabinets is given in 3.4.

3.1.1.1 Internal description

The main cabinet and expansion cabinets include, in addition to the slots for removable subassemblies, a backplane card integrating the connectors required for connecting the main card, or the RUCV-D card for an expansion cabinet, and the card supporting the external connections and expansion cards.

Nota : *Fans are fixed on the power supply module and on the ventilation module.*

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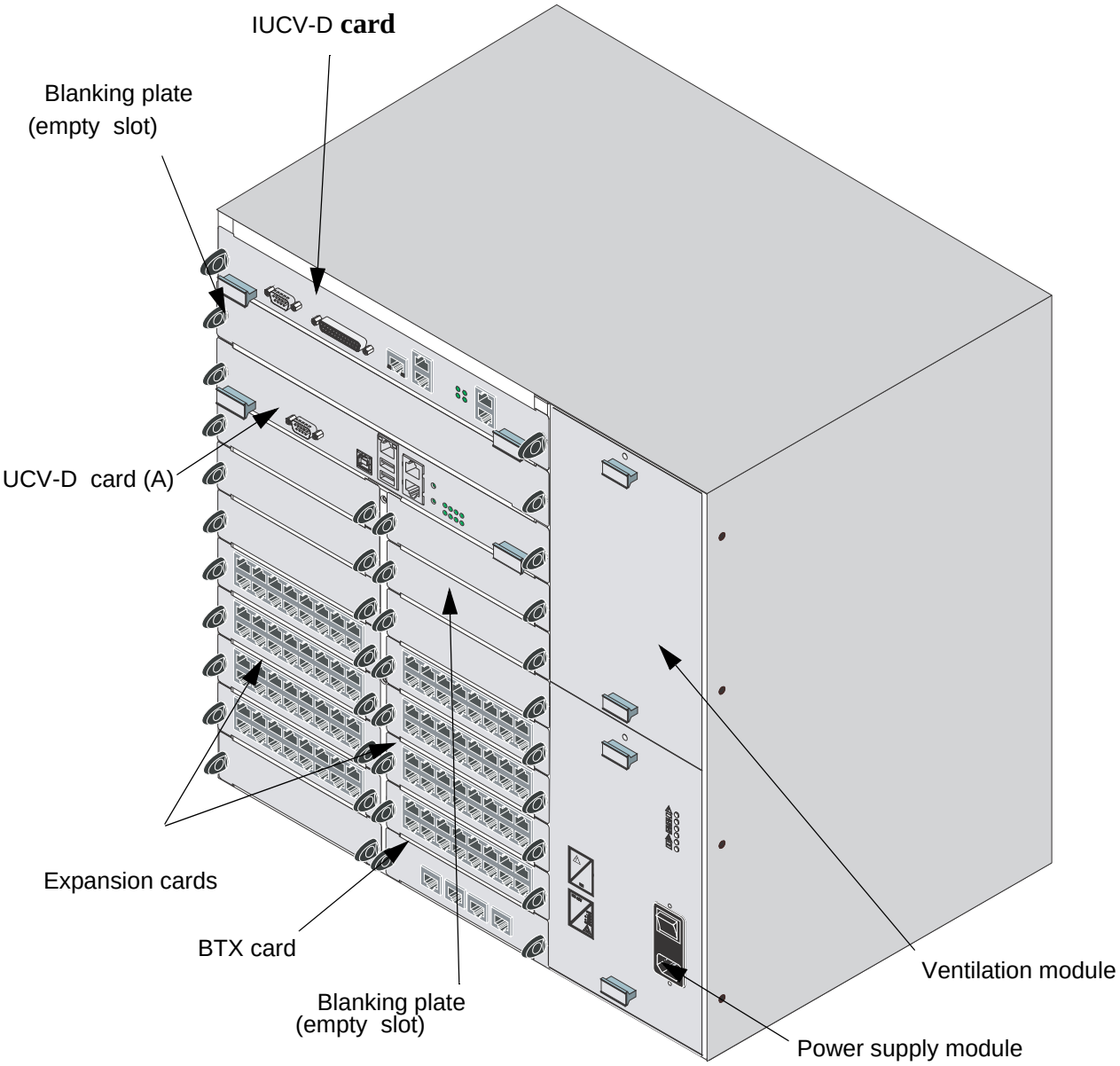


Figure 3.1 *OVERVIEW OF AN AXD CABINET IN SIMPLEX CONFIGURATION*

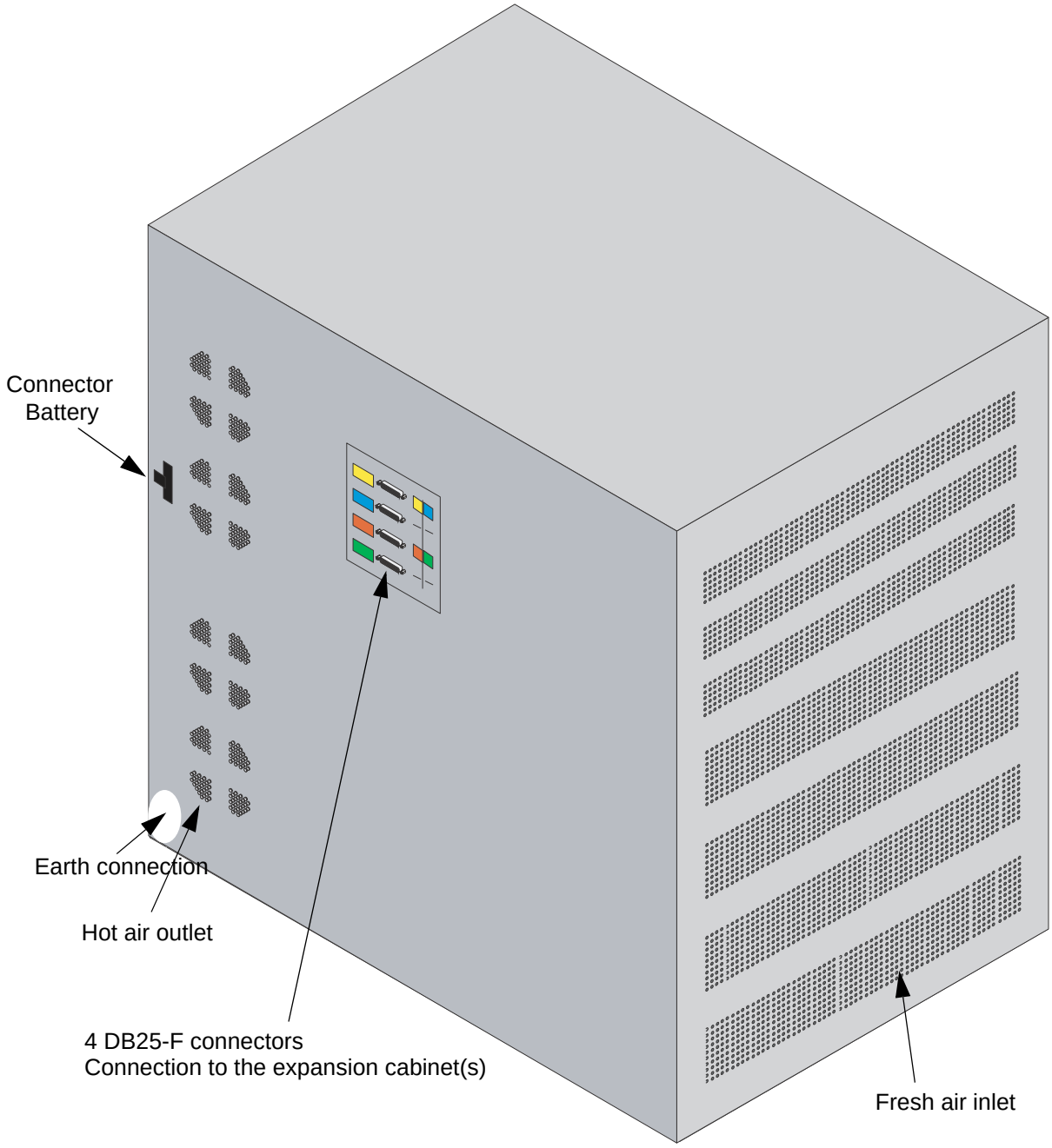


Figure 3.2 *REAR VIEW OF AN AXD CABINET*

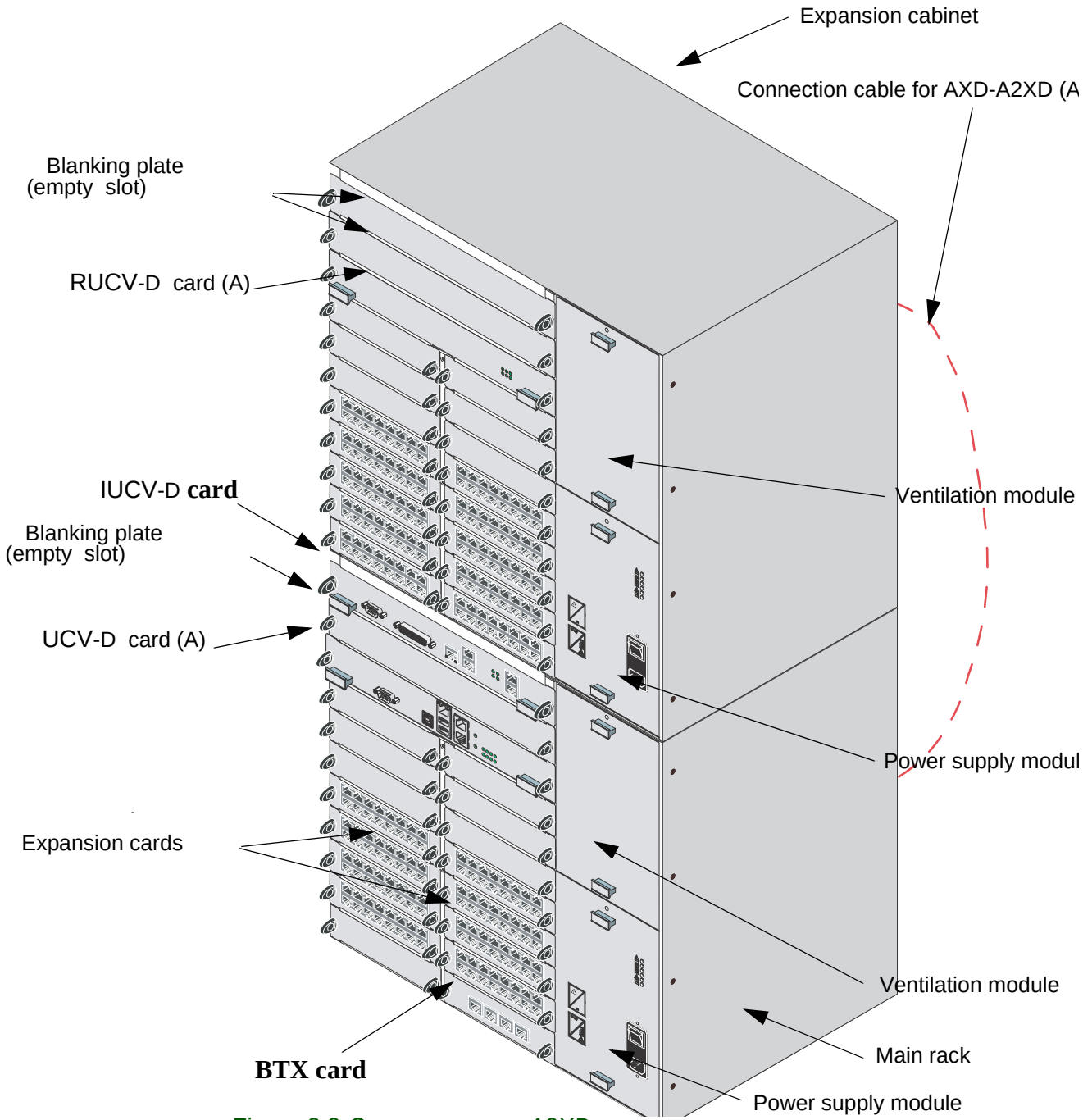


Figure 3.3 *OVERVIEW OF AN A2XD CABINET IN SIMPLEX CONFIGURATION*

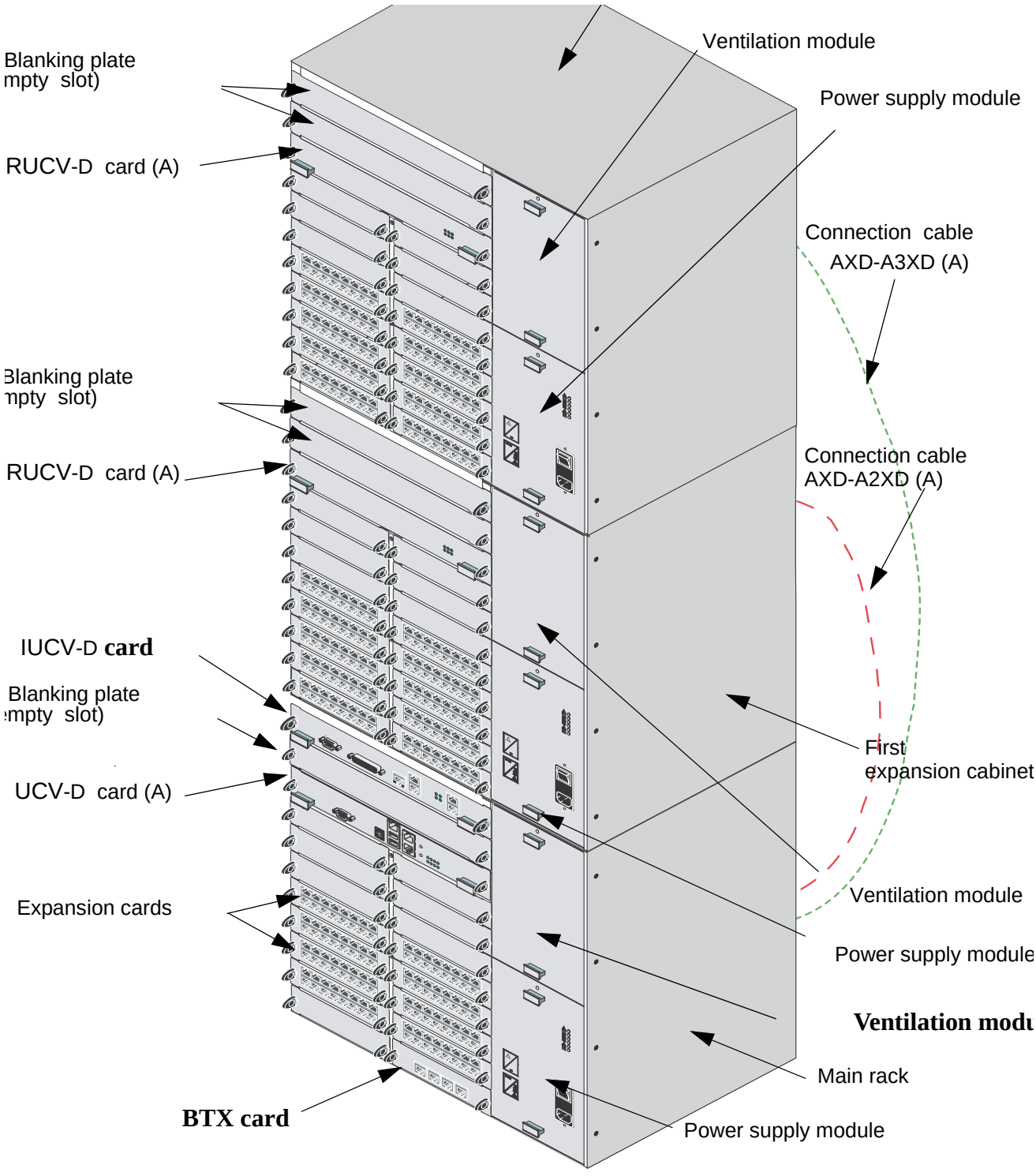


Figure 3.4 Overview of an A3XD cabinet in simplex configuration

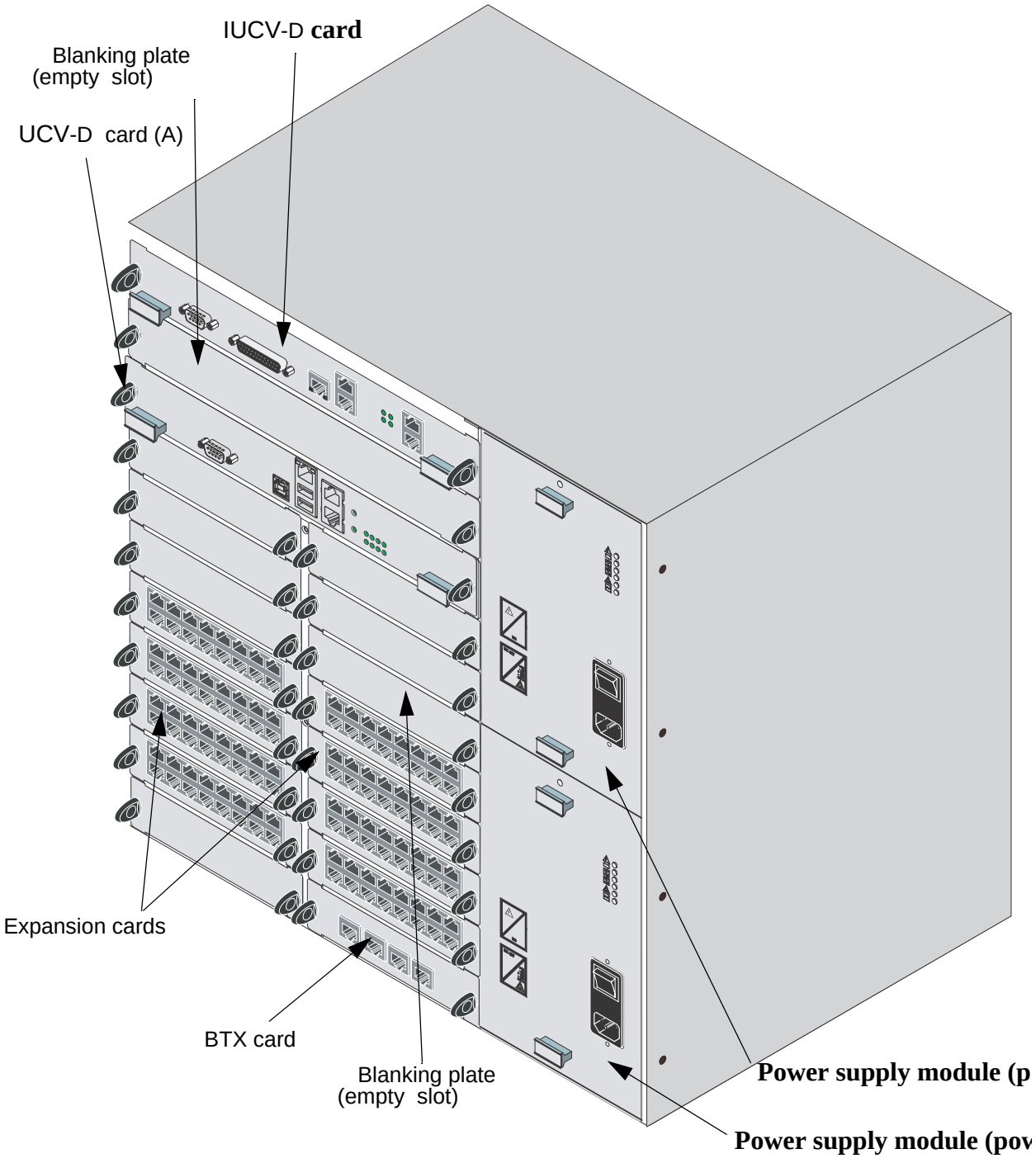


Figure 3.5 Overview of an AXD cabinet in simplex configuration with secure power unit

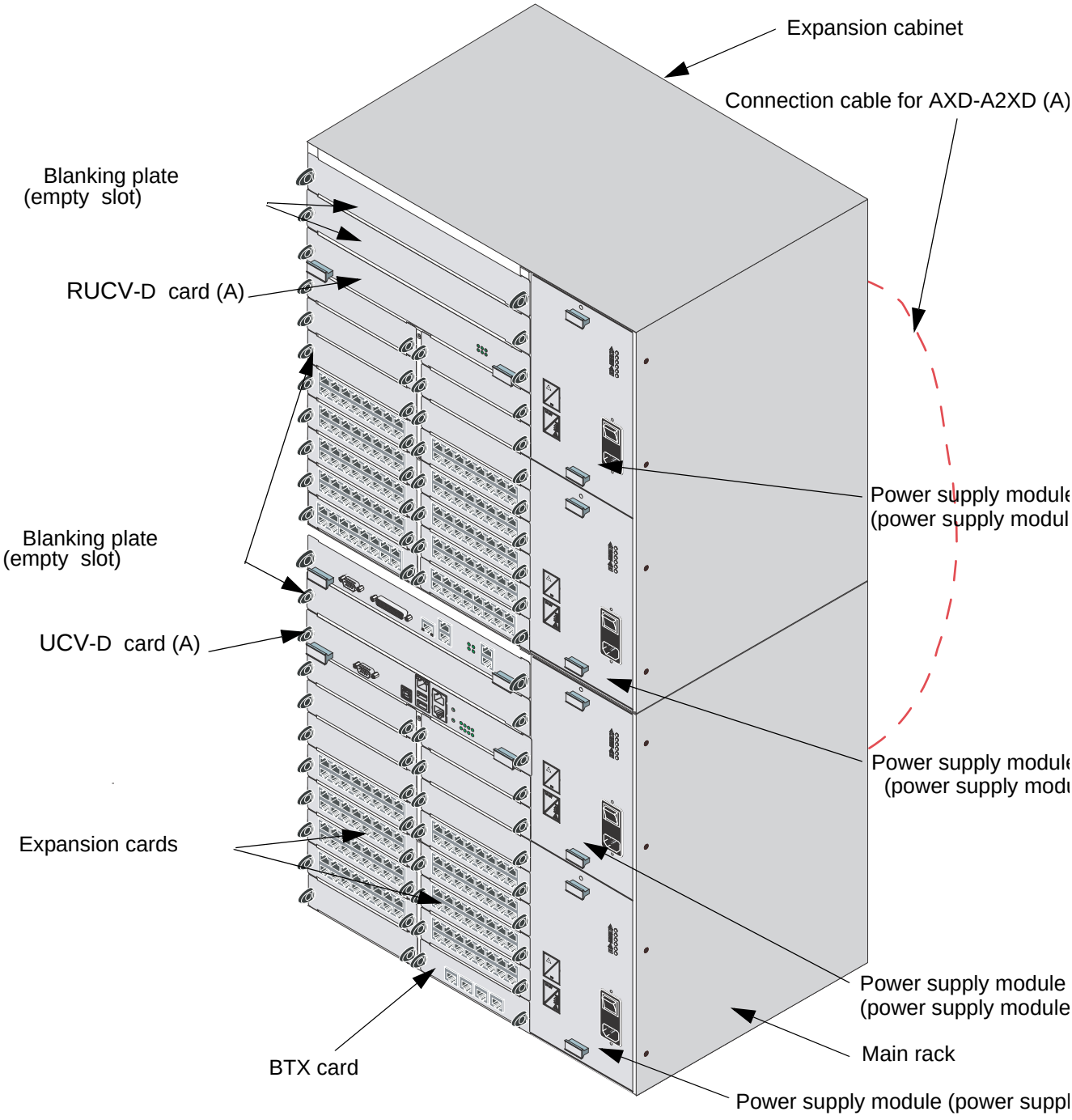


Figure 3.6 Overview of an A2XD cabinet in simplex configuration with secure power unit

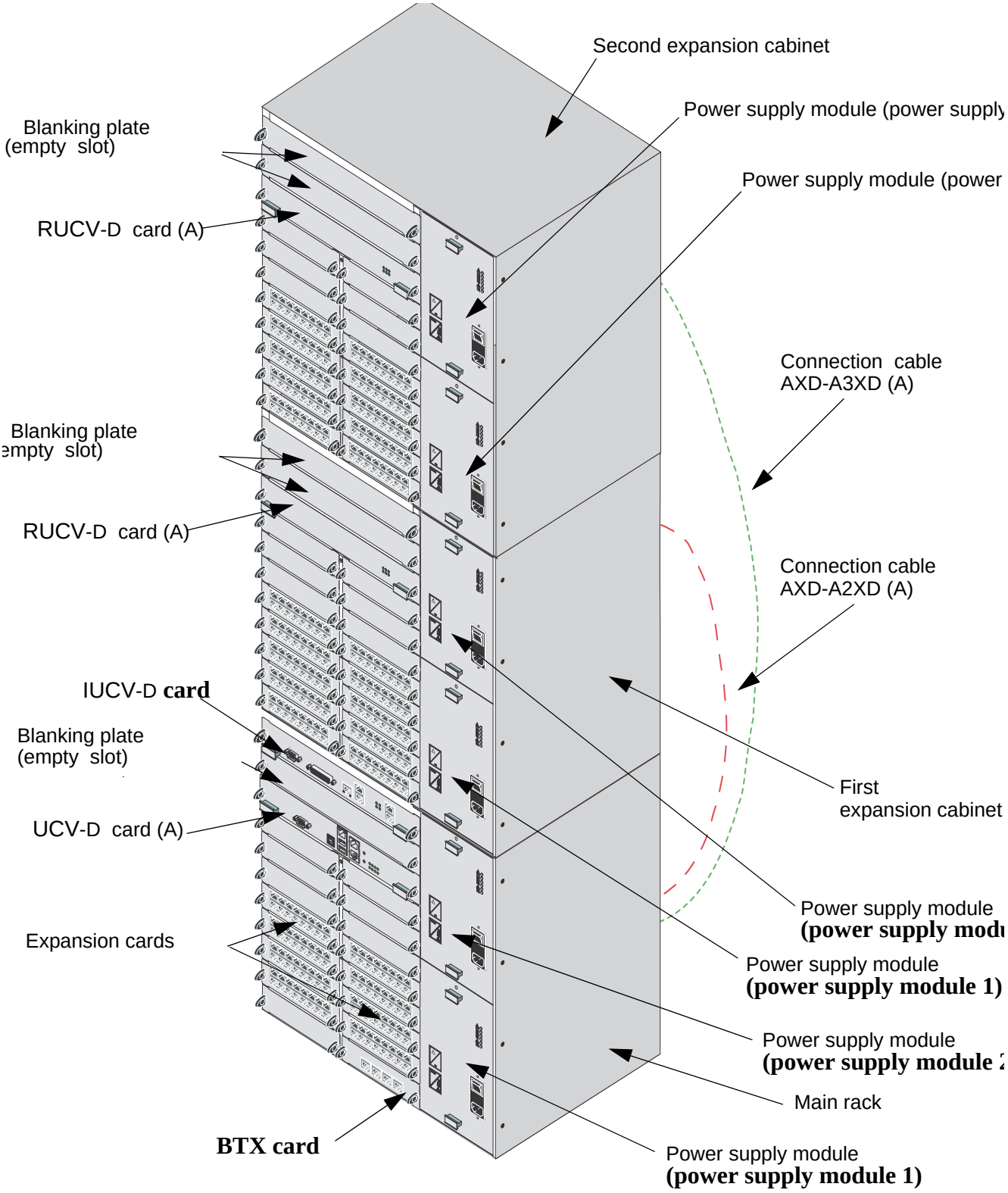


Figure 3.7 Overview of an A3XD cabinet in simplex configuration with secure power unit

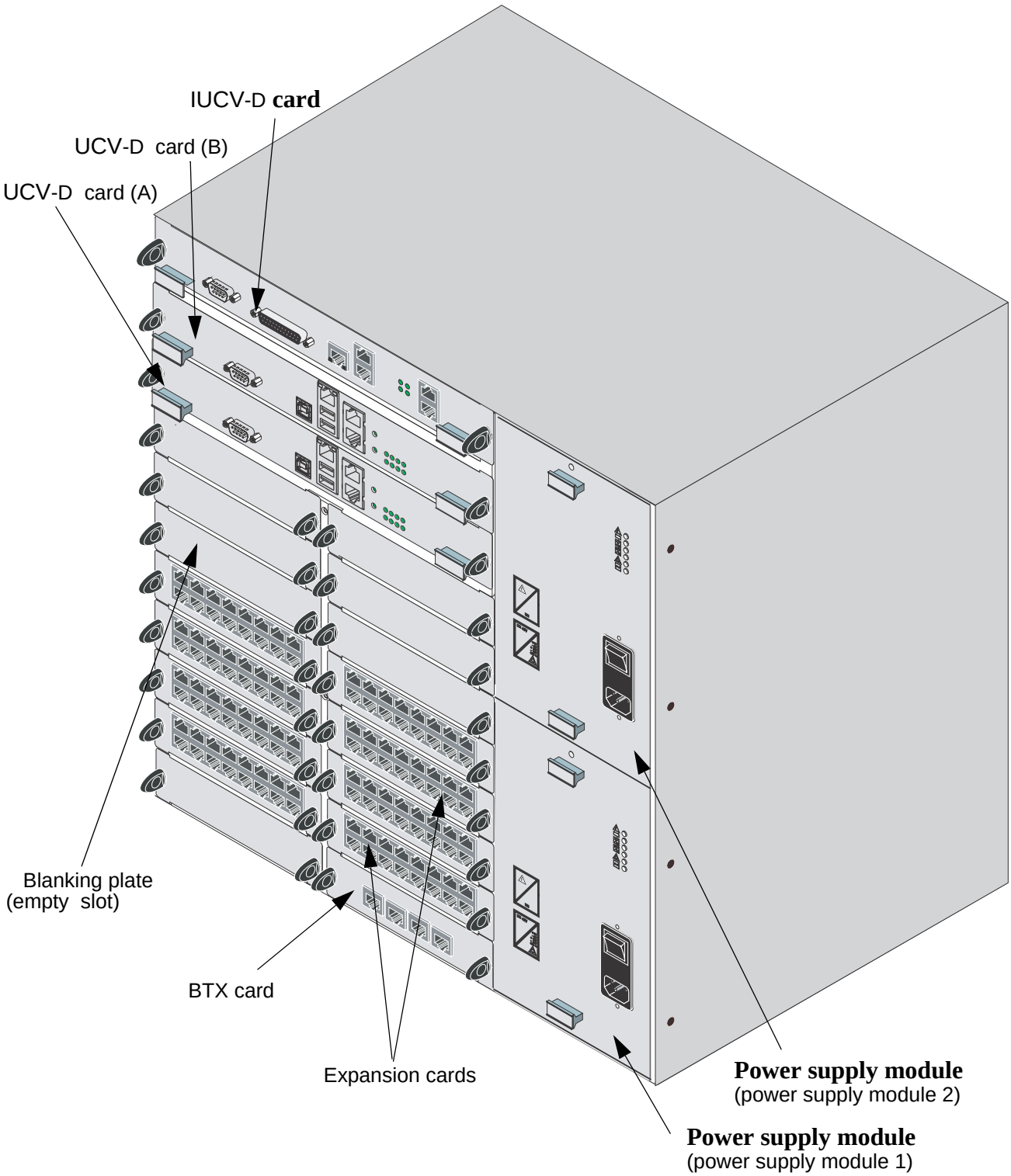
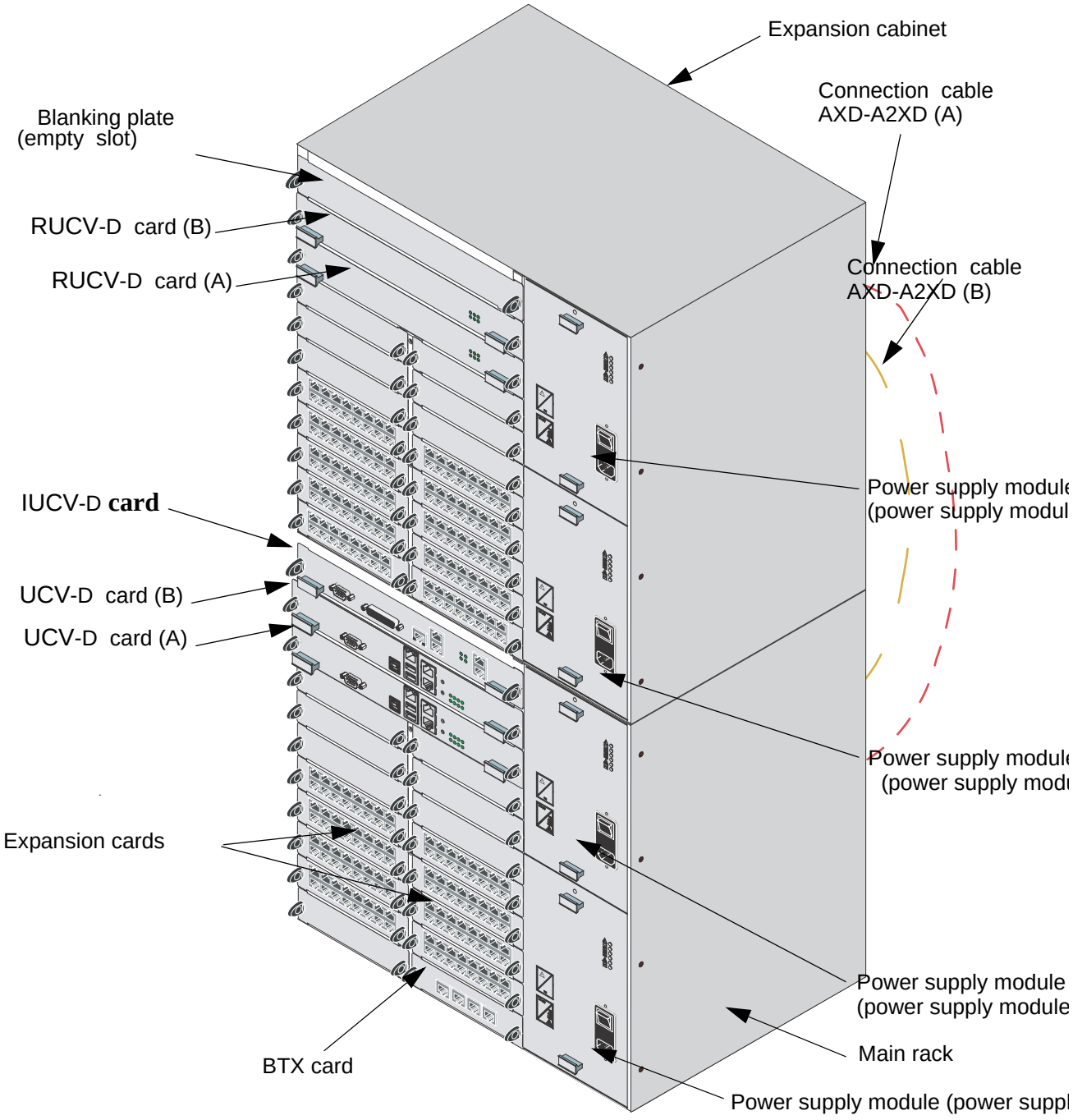


Figure 3.8 Overview of an AXD cabinet in duplex configuration


Expansion cabinet
Connection cable
AXD-A2XD (A)
Blanking plate
(empty slot)
RUCV-D card (B)
RUCV-D card (A)
Connection cable
AXD-A2XD (B)
IUCV-D card
Power supply module
(power supply modul
UCV-D card (B)
UCV-D card (A)
Power supply module
(power supply modu
Expansion cards
Power supply module
(power supply module
Main rack
BTX card
Power supply module (power suppl

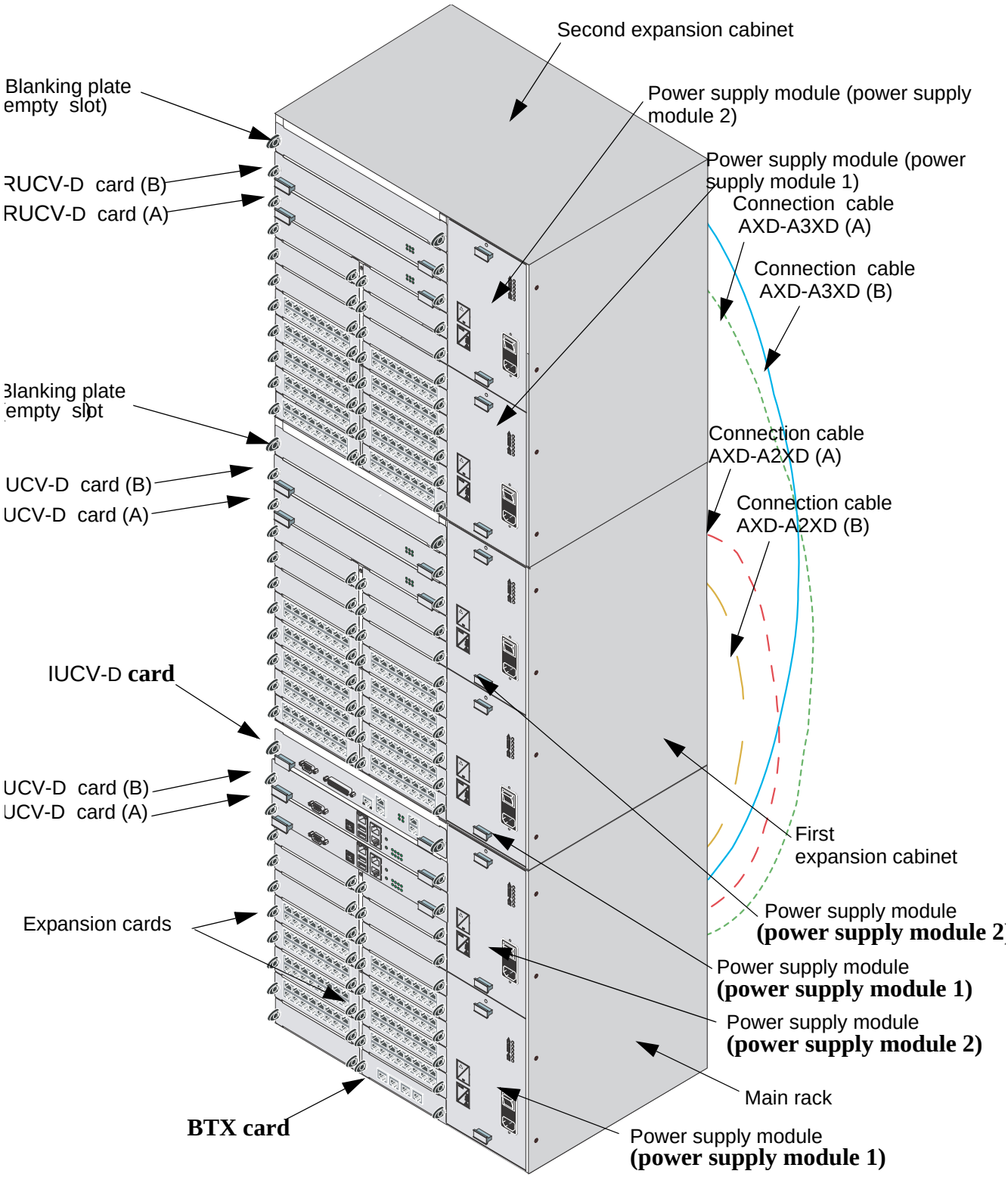


Figure 3.9 Overview of an A3XD cabinet in duplex configuration

3.1.2 General description of AXL iPBXs

An Aastra XL (AXL) iPBX comprises one main cabinet and possibly one (A2XL version) or two (A3XL version) expansion cabinets.

The main cabinet and expansion cabinets are in the form of a 19" metal cabinet, 7 U, in which the subassemblies required for the iPBX to operate are inserted. The cabinets are adapted to 19" racks with the help of brackets. They can also simply be placed on the floor or on a piece of furniture.

The cabinets can be stacked, but not installed next to each other to prevent blocking the air inlets located on the left hand side.

The main cabinet and expansion cabinets have a common structure:

- On the right-hand side a slot for the power supply module
- A slot, in the upper part of the cabinet, reserved for the main card
- 2 rows of 7 slots (i.e. 14 slots) reserved for plug-in expansion cards along the guides on the sides of the cabinet (RJ45 format)
- RJ cards are locked on the front panel of the cabinet, blanking plates must be fitted in unused slots.
- Air inlets/outlets for ventilating the elements in the cabinet are available on:
  - the left-hand side: fresh air inlet
  - rear panel: hot air outlet.

The external cables are connected on the front panel of the subassemblies which can be inserted in the cabinet (main card, expansion cards, optional battery). The expansion cabinets are connected at the back of the cabinet.

The list of subassemblies which can be inserted into the main cabinet and expansion cabinets is provided in Section3.4.

The main cabinet and expansion cabinets include, in addition to the slots for removable subassemblies, a backplane card integrating the connectors required for the main card, or the RUCV card for an expansion cabinet, and the expansion cards.

Nota : *The fans are fitted onto the power supply module.*

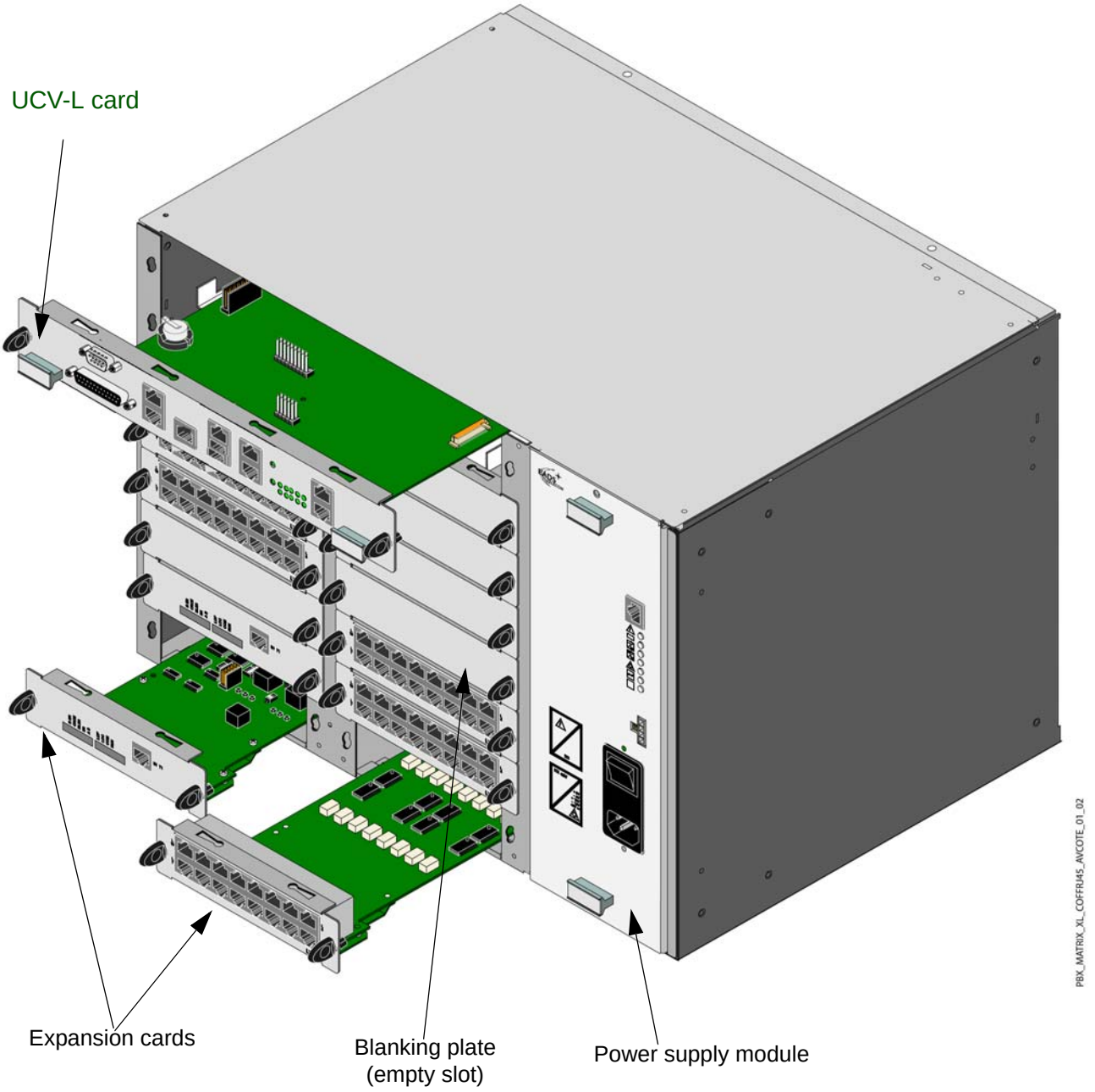


Figure 3.10 Overview of an AXL cabinet

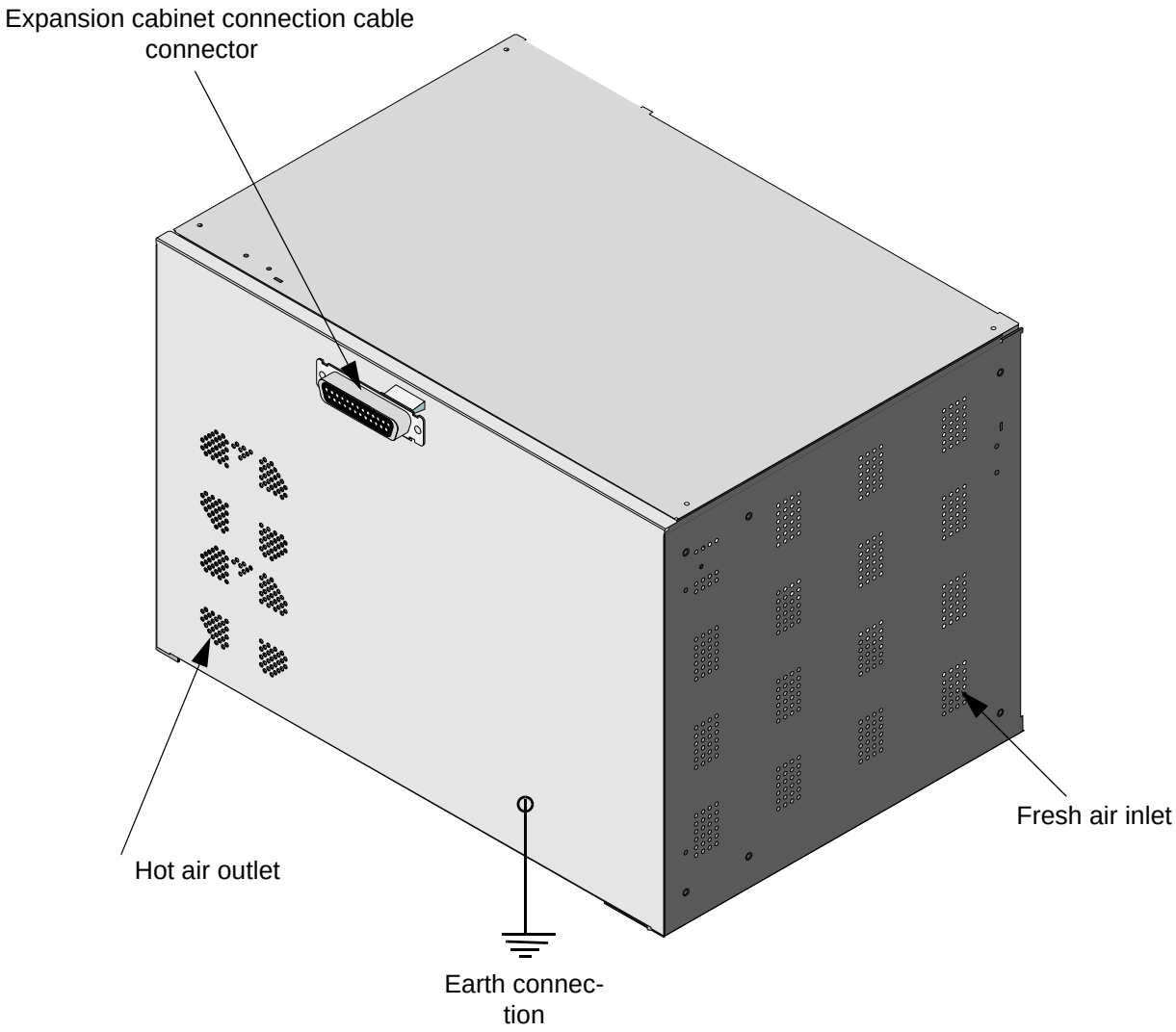


Figure 3.11 *REAR VIEW OF AN AXL CABINET*

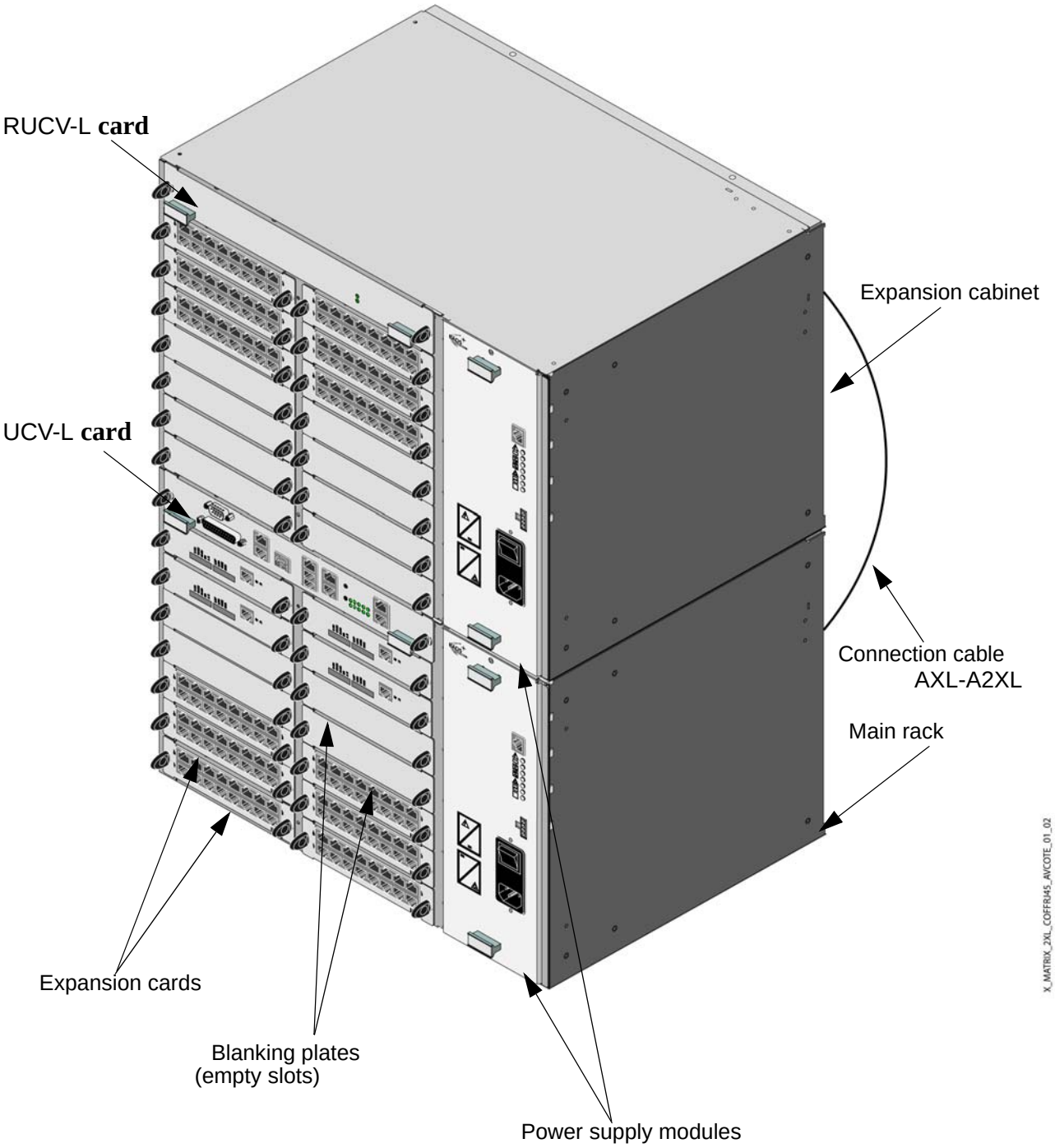


Figure 3.12 Overview of an A2XL cabinet

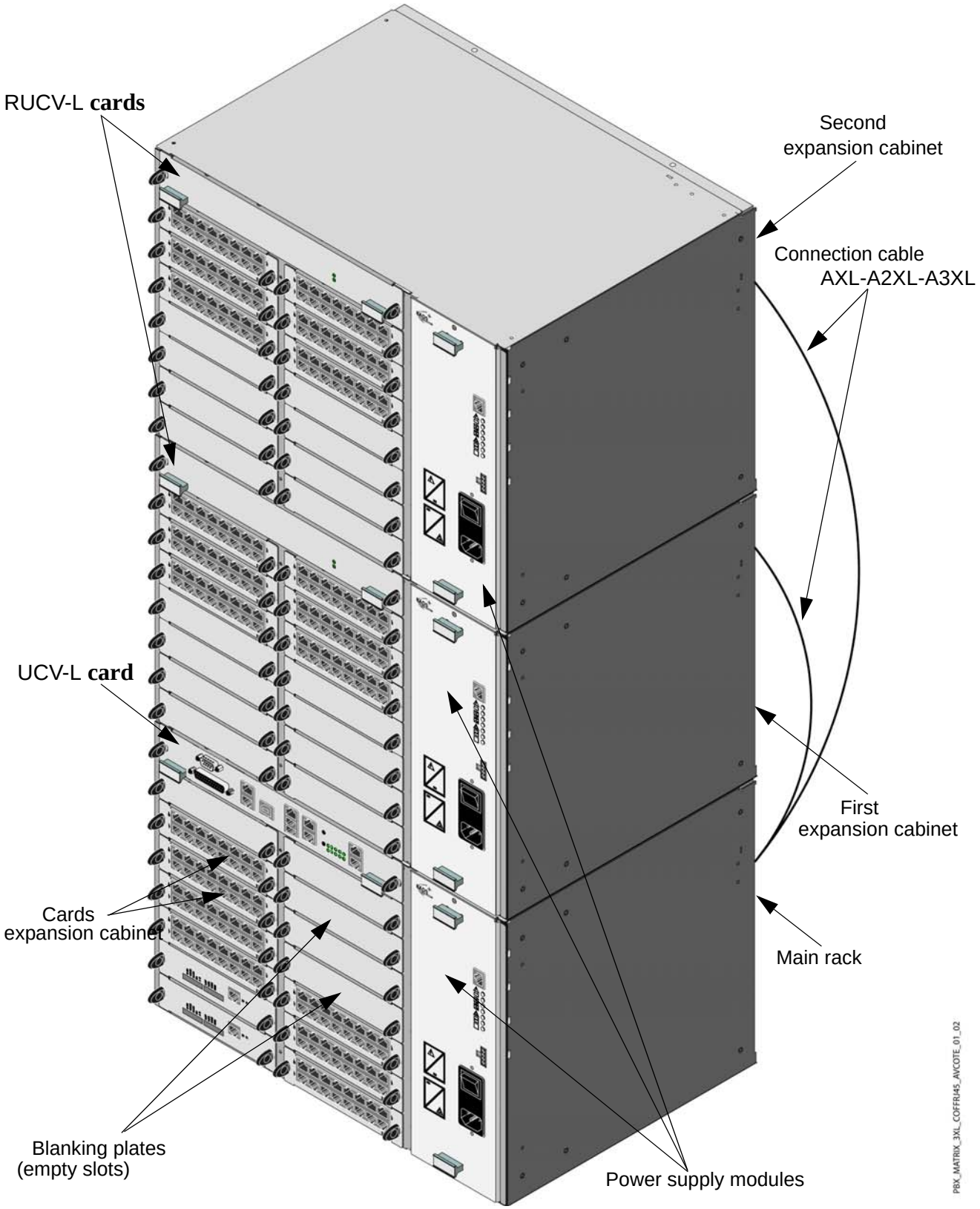


Figure 3.13 Overview of an A3XL cabinet

3.1.3 General description of AXS iPBXs

An Aastra XS (AXS) iPBX includes a main cabinet, and possibly an expansion cabinet (A2XS version).

The main cabinet and the expansion cabinets are in the form of a 19" metal cabinet, 2 U, in which the subassemblies required for the iPBX to operate are inserted.

The cabinets are adapted to 19" racks with the help of brackets. They can also simply be placed on the floor or on a piece of furniture, or wall-mounted.

The cabinets can be stacked or set side by side. In the case of wall-mounting, the expansion cabinet can only be fitted beside the basic cabinet.

The two cabinets present a common structure:

- A slot, located at the base of the cabinet, reserved for the main UCV-S card.
- An EXT1-S card, fitted with:
- Extension and T0/S0 interface sockets
- RJ45 sockets for the analogue and digital equipment interfaces on the front panel.
- 3 slots, located in the upper part of the cabinet, reserved for expansion cards (RJ45 format). RJ cards are locked on the front panel of the cabinet, blanking plates must be fitted in unused slots.
- Air inlets/outlets for ventilating the elements in the cabinet are available on:
- left-hand side: fresh air inlet
- right-hand side: hot air outlet.
- You can add or remove an expansion card from the front panel without opening the cover.
- The external cables (for the main card and the expansion cards) are connected on the front panel of the cabinet. The mains, battery (optional) connection, as well as the connection to the expansion cabinet are at the back of the cabinet.
- The list of subassemblies which can be inserted in the main cabinet and expansion cabinets is provided in Section3.4.

3.1.4 Internal description

The main cabinet and expansion cabinet include, in addition to the slots for the CPU cards and removable subassemblies:

- A backplane (UCV-S for a main cabinet or RUCV-S for an expansion cabinet) meant to host expansion cards
- The expansion cards can be plugged in along the guides located on the sides of the cabinets.
- A power unit connected to the backplane (UCV-S or RUCV-S)
- A fan.

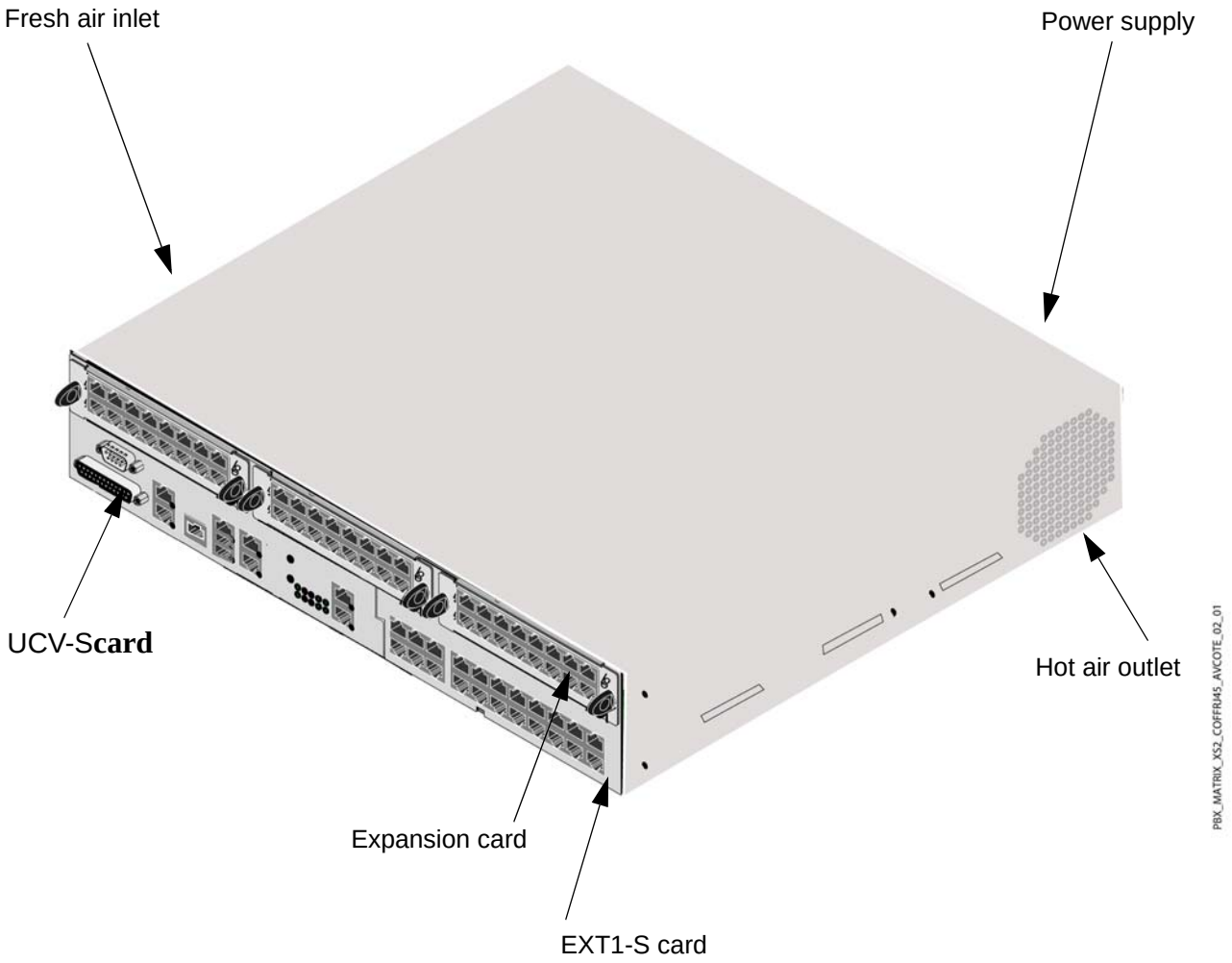


Figure 3.14 Overview of an AXS cabinet

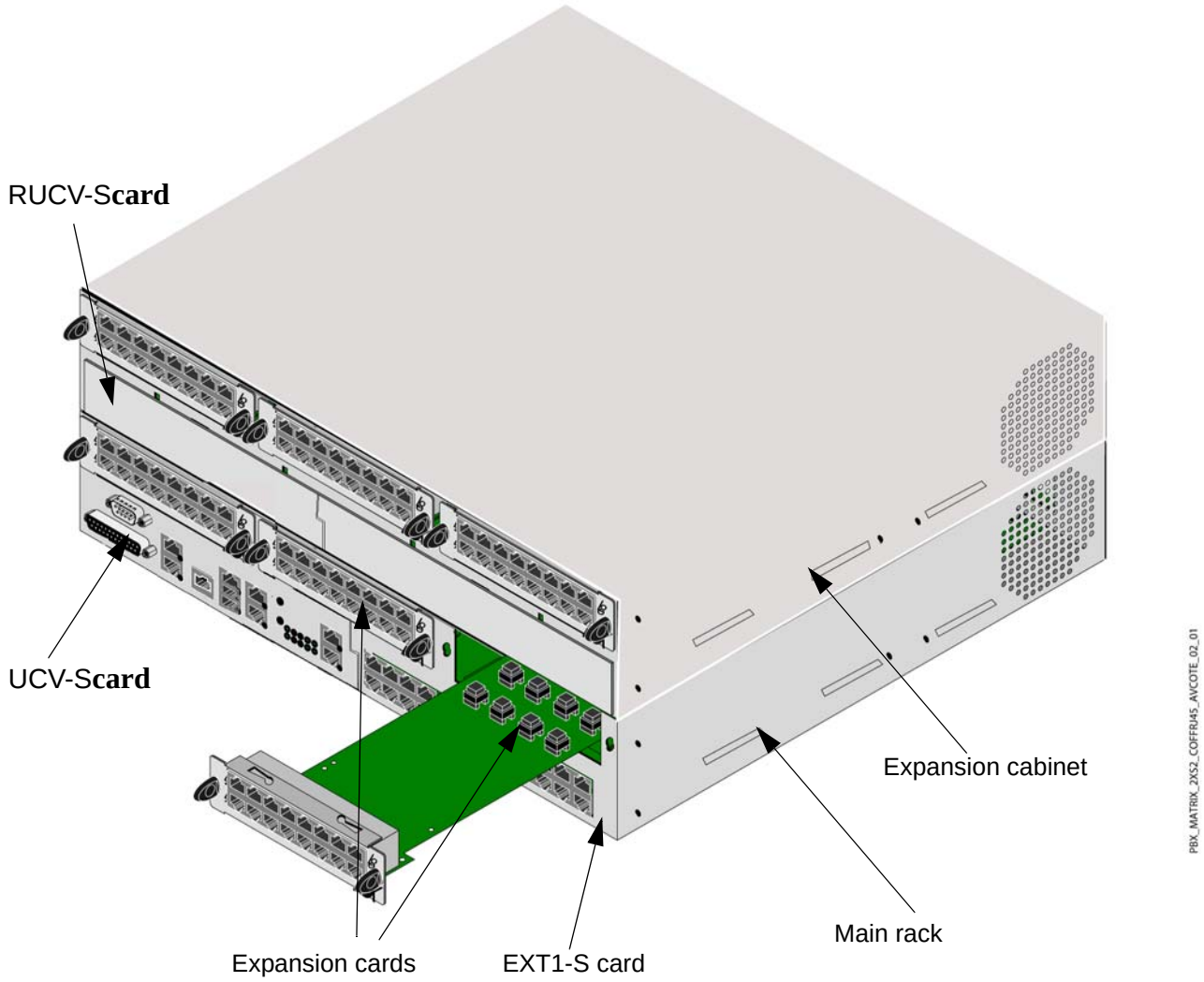


Figure 3.15 Overview of an A2XS cabinet

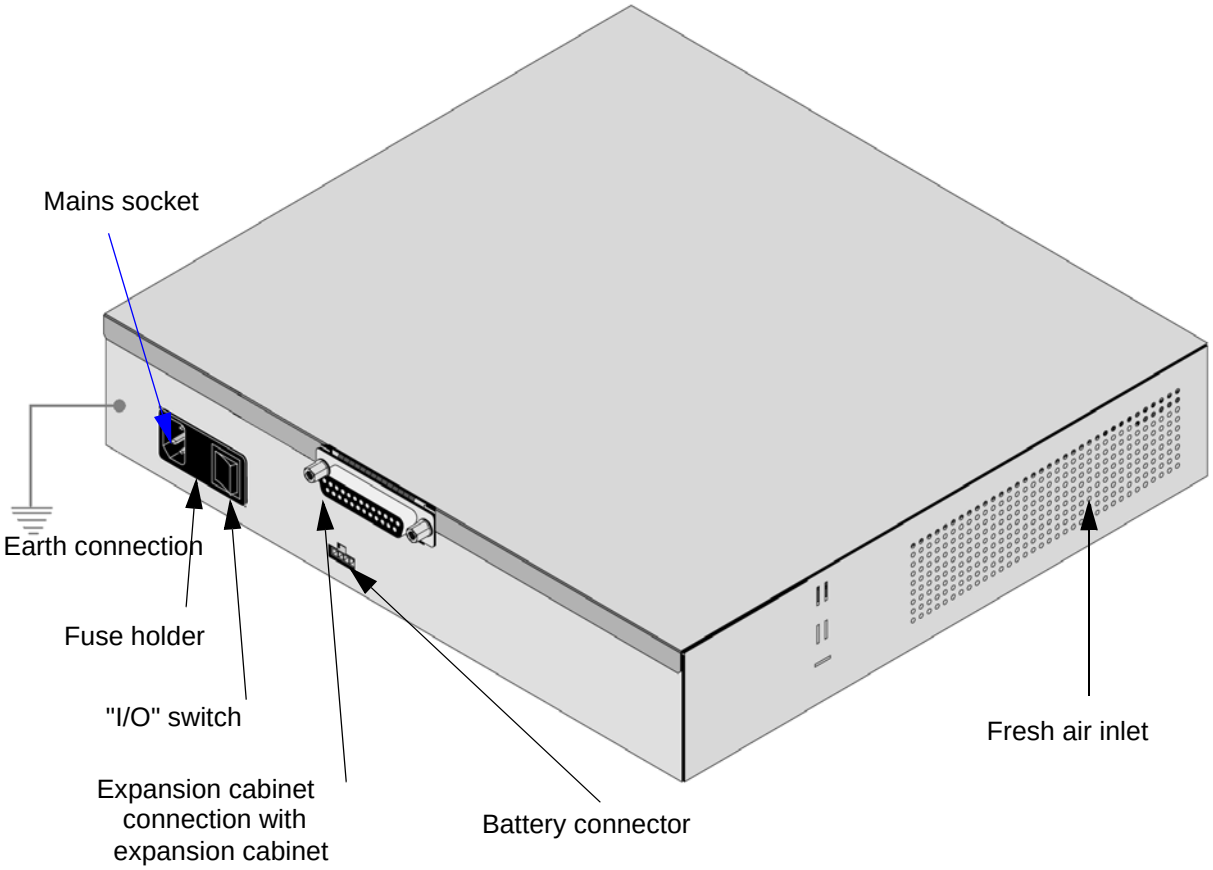


Figure 3.16 Rear view of an AXS cabinet

3.1.5 Physical description of an Aastra XS12 iPBX

3.1.5.1 Control keys

An Aastra XS12 (AXS12) iPBX includes a main cabinet, and possibly an expansion cabinet (version A2XS12).

The main cabinet and the expansion cabinets are in the form of a 19" metal cabinet, 2 U, in which the subassemblies required for the iPBX to operate are inserted.

The cabinets are adapted to 19" racks with the help of brackets. They can also simply be placed on the floor or on a piece of furniture, or wall-mounted.

The cabinets can be stacked or set side by side. In the case of wall-mounting, the expansion cabinet can only be fitted beside the basic cabinet.

The two cabinets present a common structure:

- A slot, located at the base of the cabinet, reserved for the main UCV-S card.
- An EXT1-S12 card, fitted with:
- Extension and T0/S0 interface sockets
- RJ45 sockets for the analogue and digital equipment interfaces on the front panel.
- 3 slots, located in the upper part of the cabinet, reserved for expansion cards (RJ45 format). RJ cards are locked on the front panel of the cabinet, blanking plates must be fitted in unused slots.
- Air inlets/outlets for ventilating the elements in the cabinet are available on:
- left-hand side: fresh air inlet
- right-hand side: hot air outlet.
- You can add or remove an expansion card from the front panel without opening the cover.
- The external cables (for the main card and the expansion cards) are connected on the front panel of the cabinet. The mains, battery (optional) connection, as well as the connection to the expansion cabinet are at the back of the cabinet.
- The list of subassemblies which can be inserted in the main cabinet and expansion cabinets is provided in Section3.4.

3.1.5.2 Internal description

The main cabinet and expansion cabinet include, in addition to the slots for the CPU cards and removable subassemblies:

- A backplane (UCV-S for a main cabinet or RUCV-S for an expansion cabinet) meant to host expansion cards
- The expansion cards can be plugged in along the guides located on the sides of the cabinets.
- A power unit connected to the backplane (UCV-S or RUCV-S)
- A fan.

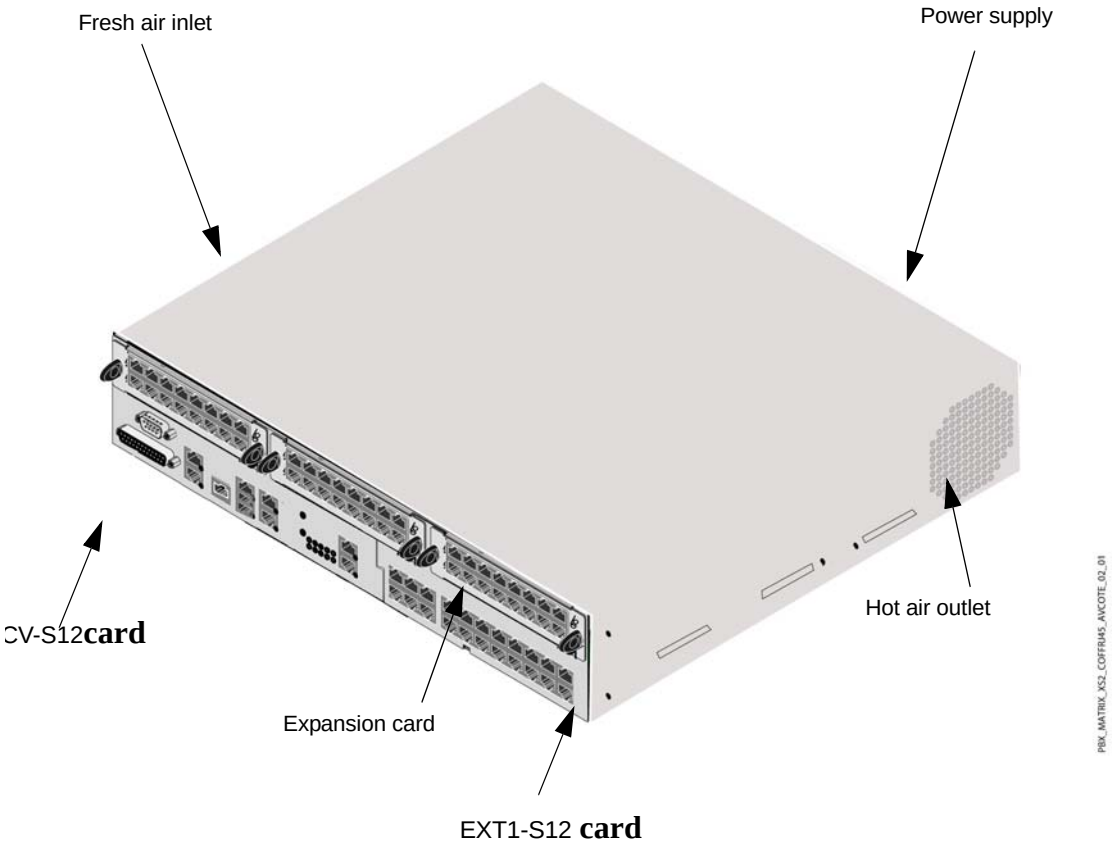


Figure 3.17 Overview of an AXS12 cabinet

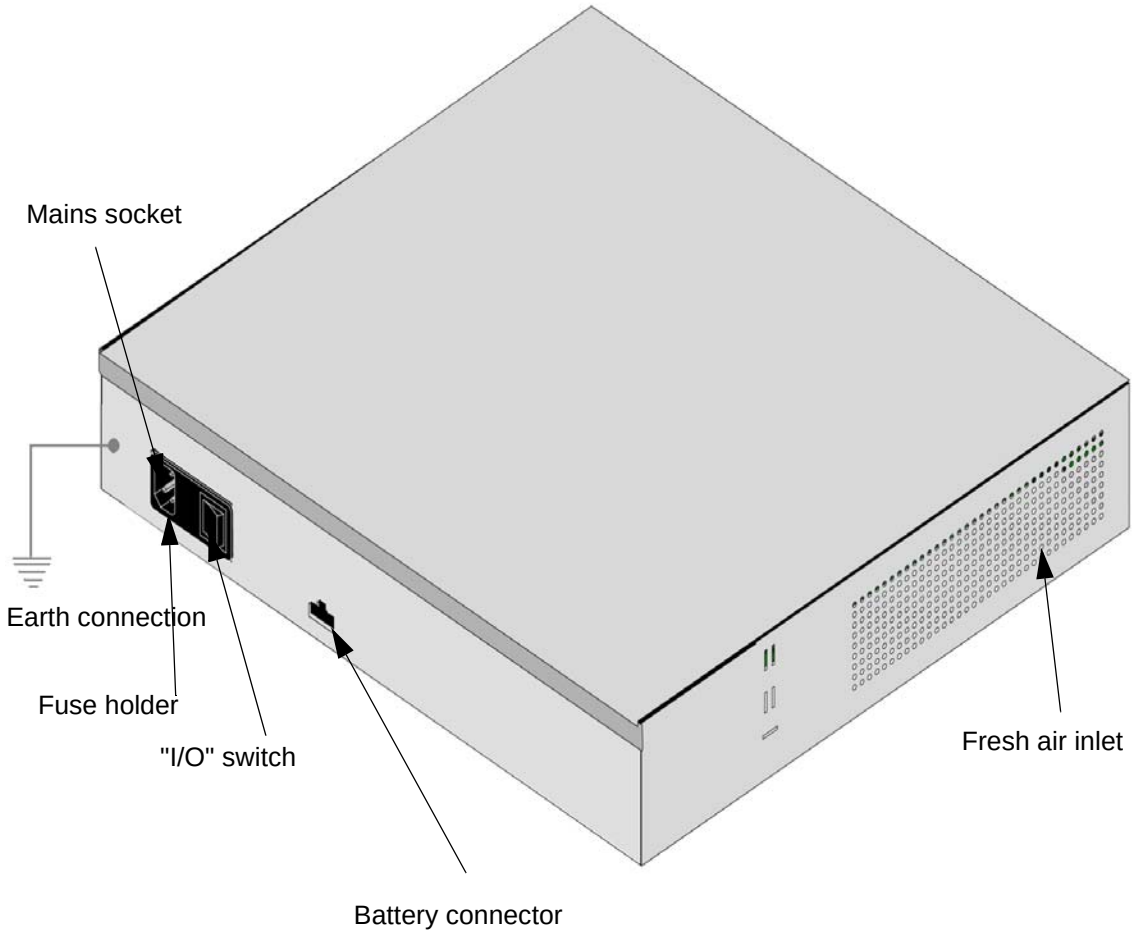


Figure 3.18 Rear view of an AXS12 cabinet

3.1.6 Physical description of an Aastra XS6 iPBX

3.1.6.1 Control keys

An Aastra XS6 (AXS6) iPBX consists of a main cabinet, and possibly an expansion cabinet (version A2XS6).

The main cabinet and the expansion cabinets are in the form of a 19" metal cabinet, 2 U, in which the subassemblies required for the iPBX to operate are inserted.

The cabinets are adapted to 19" racks with the help of brackets. They can also simply be placed on the floor or on a piece of furniture, or wall-mounted.

The cabinets can be stacked or set side by side. In the case of wall-mounting, the expansion cabinet can only be fitted beside the basic cabinet.

The two cabinets present a common structure:

- A slot, located at the base of the cabinet, reserved for the main UCV-S card.
- An EXT1-S6 card, fitted with:
- Extension and T0/S0 interface sockets
- RJ45 sockets for the analogue and digital equipment interfaces on the front panel.
- 3 slots, located in the upper part of the cabinet, reserved for expansion cards (RJ45 format). RJ cards are locked on the front panel of the cabinet, blanking plates must be fitted in unused slots.
- Air inlets/outlets for ventilating the elements in the cabinet are available on:
- left-hand side: fresh air inlet
- right-hand side: hot air outlet.
- You can add or remove an expansion card from the front panel without opening the cover.
- The external cables (for the main card and the expansion cards) are connected on the front panel of the cabinet. The mains, battery (optional) connection, as well as the connection to the expansion cabinet are at the back of the cabinet.
- The list of subassemblies which can be inserted in the main cabinet and expansion cabinets is provided in Section3.4.

3.1.6.2 Internal description

The main cabinet and expansion cabinet include, in addition to the slots for the CPU cards and removable subassemblies:

- A backplane (UCV-S for a main cabinet or RUCV-S for an expansion cabinet) meant to host expansion cards
- The expansion cards can be plugged in along the guides located on the sides of the cabinets.
- A power unit connected to the backplane (UCV-S or RUCV-S)
- A fan.

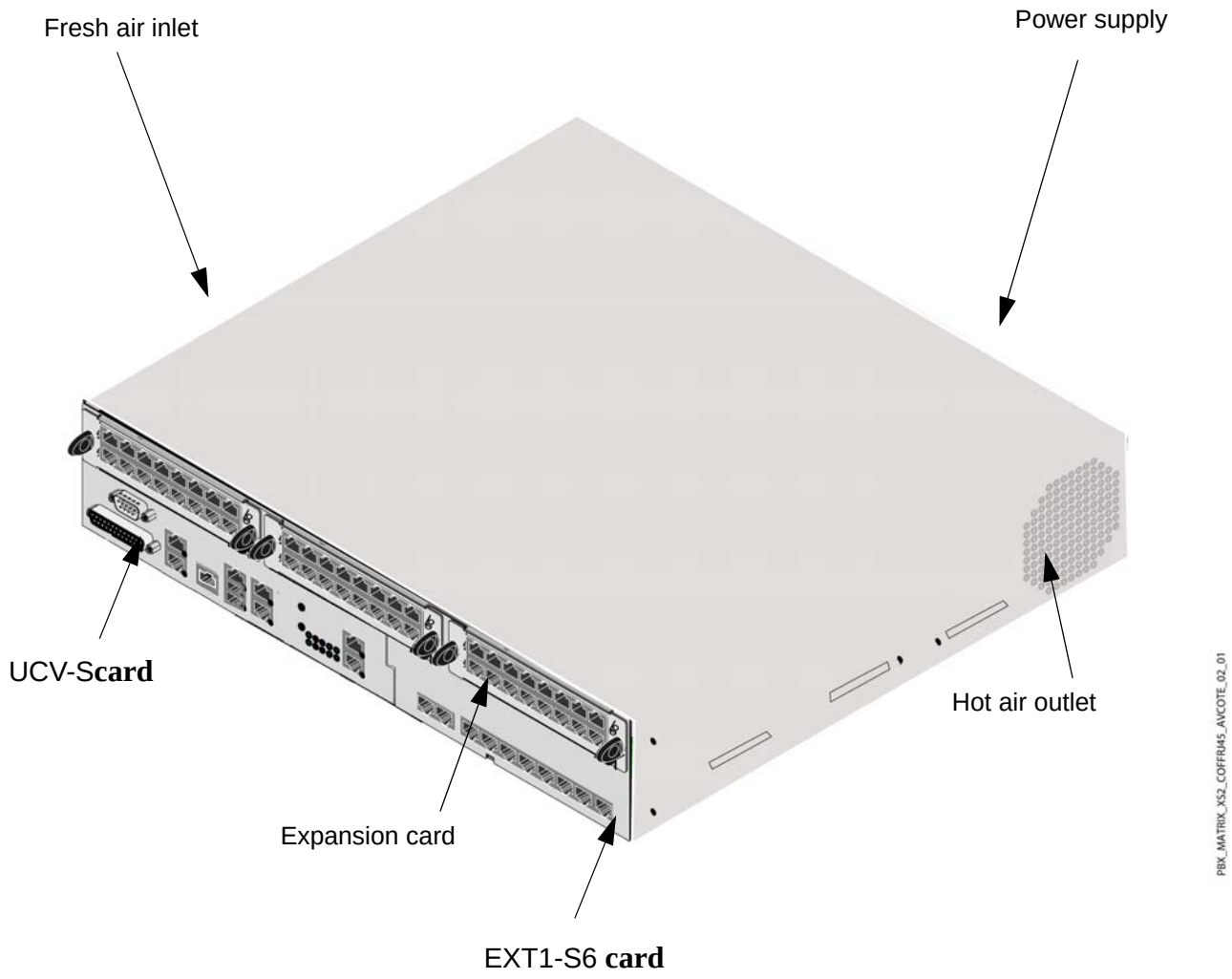


Figure 3.19 Overview of an AXS6 cabinet

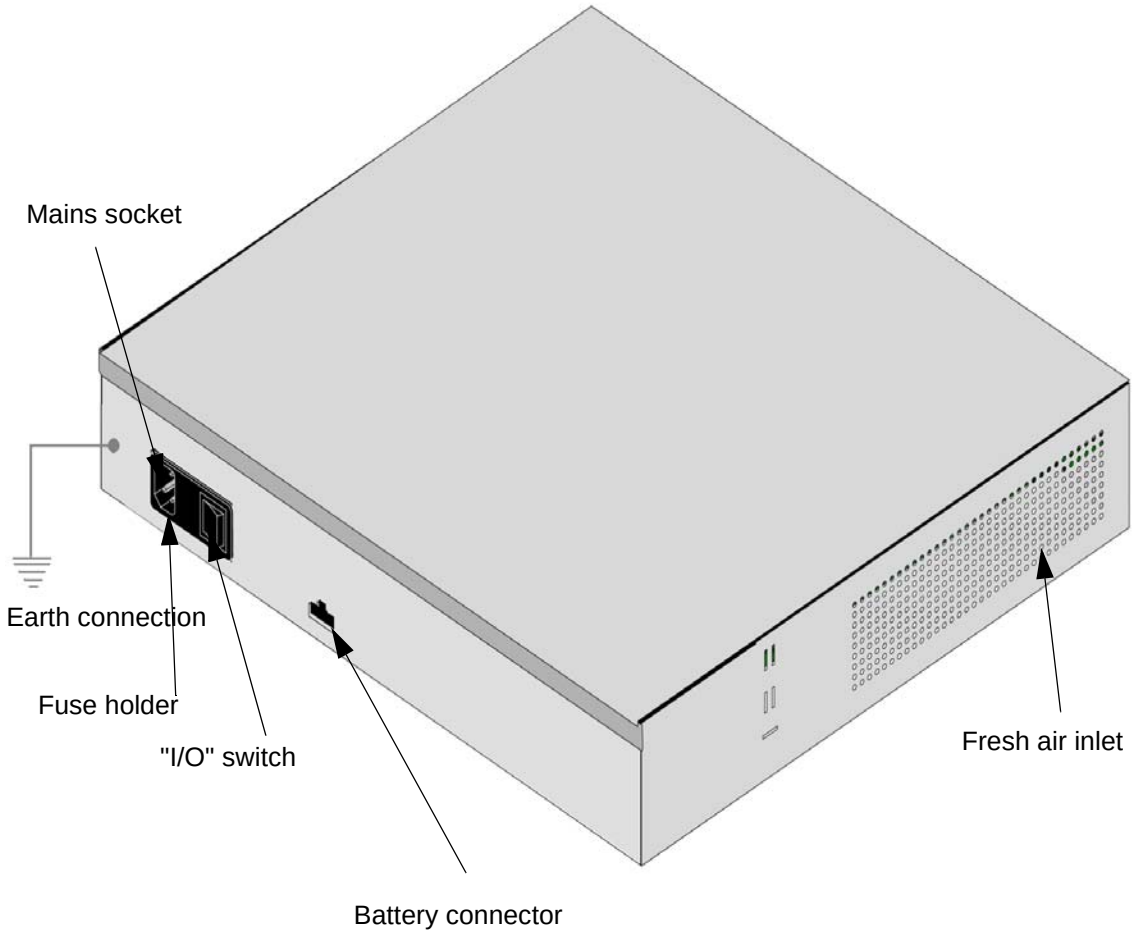


Figure 3.20 Rear view of an AXS6 cabinet

3.2 Characteristics

3.2.1 Physical specifications

CHARACTERISTICS	AXL cabinet	AXS/AXS12/ AXS6 cabinet	MAIN AXD
Height	310 mm (7 U)	89 mm (2 U)	450 mm (10 U)
Width	440 mm (19")	440 mm (19")	440 mm (19")
Depth	316 mm	400 mm	316 mm
Max. weight	20 kg	7.5 kg	15 kg (simplex) 18 kg (duplex) without expansion cards and 28 kg in total

TABLE 3.1PHYSICAL CHARACTERISTICS OF AXD, AXL, AXS, AXS12, AND AXS6 PBXS

3.2.2 Electrical specifications

ADS 350XD power supply module (AXD iPBX)	
CHARACTERISTICS	**VALUES**
Rated voltage	115 V or 230 V
Tolerances	+/- 10%
Frequency	50 or 60 Hz
Power	350 W
Converter (48 V)	+5 V / 15 A et -5 V / 0,5 A +12 V / 0.5 A and -12 V / 0.65 A * (* 0.25 A for cards and 0.40 A for fans) -48 V / 2.9 A ringer: 70 V / 0.2A 25-50 Hz (symmetrical current)
External battery (option)	See Section 3.8.7.1

ADS 300XD power supply module (AXD iPBX)	
CHARACTERISTICS	**VALUES**
Rated voltage	115 V or 230 V
Tolerances	+/- 10%
Frequency	50 or 60 Hz
Power	300 W
Converter (48 V)	+5 V / 15 A et -5 V / 0,5 A +12 V / 0.5 A and -12 V / 0.65 A (* 0,25 A for cards and 0,40 A for fans) -48 V / 1.9 A ringer: 70 V / 0.2A 25-50 Hz (symmetrical current)
External battery (option)	See Section 3.8.7.1

ADS 350X power supply module (AXL iPBX)	
CHARACTERISTICS	**VALUES**
Rated voltage	115 V or 230 V
Tolerances	+/- 10%
Frequency	50 or 60 Hz
Power	150 W
Converter (48 V)	+5 V / 15 A and -5 V / 0.5 A +12 V / 0.15 A and -12 V / 0.65 A -48 V / 2.9 A ring 70 V / 0,2 A 25-50 Hz (symmetrical current)
External battery (option)	See Section 3.8.7.1

ADS 300X power supply module (AXL iPBX)	
CHARACTERISTICS	**VALUES**
Rated voltage	115 V or 230 V
Tolerances	+/- 10%
Frequency	50 or 60 Hz
Power	300 W
Converter (48 V)	+5 V / 13 A and -5 V / 0,5 A +12 V / 0,5 A and -12 V / 0,25 A - 48 V / 1,9 A 40 V (ISDN) / 0,7 A ring 70 V / 0,2 A 25-50 Hz (symmetrical current)
External battery (option)	voir § 3.8.7.1

ADS 150X power supply module (AXS/AXS12/AXS6 iPBX)	
CHARACTERISTICS	**VALUES**
Rated voltage	115 V or 230 V
Tolerances	+/- 10%
Frequency	50 or 60 Hz
Power	150 W
Converter (48 V)	+5 V / 7 A and -5 V / 0,1 A +12 V / 0,15 A and -12 V / 0,55 A - 48 V / 0,45 A ring 70 V - 25-50 Hz / 0,06 A (symmetrical current)
Batterie externe (option)	voir § 3.8.7.1

3.2.3 Environmental conditions

Applies to the entire iPBX range

PARAMETERS	IN OPERATION	IN STORAGE
Temperature	5 to 40	-10° to 70°C
relative humidity	10% to 80 %, without condensation	10% to 95 %, without condensation

3.3 Capacity

Refer to the product Guide.

3.4 Physical breakdown

3.4.1 Aastra XD

The subassemblies of each of the Aastra XD configurations are presented in a tree in Tableau 3.2 .

Nota : *The quantities indicated are the maximum hardware and software quantities for each type of card. These quantities also depend on the configuration rules (see Section3.5) and engineering rules of each site.*

Subassemblies	MAIN CABINET AXD	AXD EXPANSION CABINET	A2XD	A3XD
Power supply module				
Simplex	1	1	2	3
Simplex with secure power supply	2	2	4	6
Duplex	2	2	4	6
Ventilation module				
Simplex	1	1	2	3
Simplex with secure power supply				
Duplex				
Battery (option)				
Simplex	1	1	2	3
Simplex with secure power supply				
Duplex				
UCV-D				
Simplex	1		1	1
Simplex with secure power supply	1		1	1
Duplex	2		2	2
RUCV-D				
Simplex		1	1	2
Simplex with secure power supply		1	1	2
Duplex		2	2	4
IUCV-D				

List of the sub-assemlies in AXD iPBXs - Folio 1 de 6 -

Subassemblies	MAIN CABINET AXD	AXD EXPANSION CABINET	A2XD	A3XD
Simplex	1		1	1
Simplex with secure power supply				
Duplex				
List of the sub-assemlies in AXD iPBXs - Folio 2 de 6 -				

Subassemblies	MAIN CABINET AXD	AXD EXPANSION CABINET	A2XD	A3XD
CLX cards				
Simplex	14 (1)		14 (1)	14 (1)
Simplex with secure power supply				
Duplex				
LD4/LD4N (2) (3)				
Simplex	6		6	6
Simplex with secure power supply				
Duplex				
LD4X (LD4N in X mode) (2) (3)				
Simplex	10		10	10
Simplex with secure power supply				
Duplex				
LT2 (2) (3)				
Simplex	6		6	6
Simplex with secure power supply				
Duplex				
IPS(2)	1	1	1	1
PT2 (2) **+ 8-channel VoIP4E** **+ 16-channel VoIP4E** **+ 32-channel VoIP4E**				
Simplex	4		4	4
Simplex with secure power supply				
Duplex				
CS1				
Simplex	4		4	4
Simplex with secure power supply				
Duplex				
CA1				
Simplex	3		3	3
Simplex with secure power supply				
Duplex				

List of the sub-assemlies in AXD iPBXs - Folio 3 de 6 -

Subassemblies	MAIN CABINET AXD	AXD EXPANSION CABINET	A2XD	A3XD
CP1				
Simplex	8		8	8
Simplex with secure power supply				
Duplex				
MUM				
Simplex	10		10	10
Simplex with secure power supply				
Duplex				
Equipment cards				
Simplex	12	16	28	44
Simplex with secure power supply				
Duplex				
LA16X				
Simplex	12	16	28	44
Simplex with secure power supply				
Duplex				
LA16X-8				
Simplex	12	16	28	44
Simplex with secure power supply				
Duplex				
LA8				
Simplex	12		12	12
Simplex with secure power supply				
Duplex				
LN16X				
Simplex	12	16	28	32
Simplex with secure power supply				
Duplex				
LN16X-8				

List of the sub-assemlies in AXD iPBXs - Folio 4 de 6 -

Subassemblies	MAIN CABINET AXD	AXD EXPANSION CABINET	A2XD	A3XD
Simplex	12	16	28	44
Simplex with secure power supply				
Duplex				
LN8				
Simplex	12		12	12
Simplex with secure power supply				
Duplex				
LM8				
Simplex	12		12	12
Simplex with secure power supply				
Duplex				
LH8				
Simplex	10		10	10
Simplex with secure power supply				
Duplex				
LH16X				
Simplex	12	14	26	40
Simplex with secure power supply				
Duplex				
LH16X-8				
Simplex	12	14	26	40
Simplex with secure power supply				
Duplex				
LR4				
Simplex	12		12	12
Simplex with secure power supply				
Duplex				
LR4-DTOC				

Subassemblies	MAIN CABINET AXD	AXD EXPANSION CABINET	A2XD	A3XD
Simplex	12		12	12
Simplex with secure power supply				
Duplex				
LI1				
Simplex	12		12	12
Simplex with secure power supply				
Duplex				
BTX				
Simplex	1	1	1	1
Simplex with secure power supply				
Duplex				

List of the sub-assemlies in AXD iPBXs - Folio 6 de 6 -

TABLEAU 3.2 LIST OF AXD IPBX SUBASSEMBLIES

(1) If this figure is reached: equipment cards cannot be installed. If the number of CLX cards is below 12: any equipment card can be added.

(2) A - max number of LT2 = 6

B - max number of IPS = 1

C- max number of PT2 (32 V) = 4

D - max number of PT2 (32 V) + LT2 = 8

E- max number of DECT base stations = 40 (10 LD4N in X mode, with iPBX software release R4.1 – Other cases: max number of base stations = 24)

F- max number of CLX (LD4N in X mode with iPBX software release 4.1 min, LT2, PT2, CP1, CS1, CA1, MUM) = 12

G- max number of CLX (case of LD4 or LD4N not in X mode, LT2, PT2, CP1, CS1, CA1, MUM) = 10

If case F is reached (CLX = 12), no other card is accepted in the main cabinet.
If case G is reached (CLX = 10), no other card is accepted in the main cabinet.

(3) The LD4, LD4N, LD4X and LT2 synchronising cards must be located in slots 0 to 5 of the AXD main cabinet when they are to be used to provide the carrier (RTCP) reference clocks for the main card.

3.4.2 Aastra XS/XL

The subassemblies in each of the AXL, AXS, AXS12 and AXS6 iPBXs are presented in a tree in 3.3.

Nota : *The quantities indicated are the maximum hardware and software quantities for each type of card. These quantities also depend on the configuration rules (see Section3.5) and engineering rules of each site.*

SUBASSEMBLIES	AXL Main Cabinet	A2XL	A3XL	AXS Cabinet Main	A2XS	AXS12 main cabinet	AXS6 main cabinet
Power supply module	1	2	3	1	2	1	1
Battery (option)	1	2	3	1	2	1	1

SUBASSEMBLIES	AXL Main Cabinet	A2XL	A3XL	AXS Cabinet Main	A2XS	AXS12 main cabinet	AXS6 main cabinet
UCV	1	1	1	1	1	1	1
RUCV		1	2		1		
CLX cards	10 [1]	10 [1]	10 [1]	3	3	3	3
LD4/LD4N [(2) (3)]	6	6	6	3	3	3	3
LD4X [(2) (3)]	10	10	10	3	3	3	3
LT2 [(2) (3)]	6	6	6	1	1	1	1
IPS [(2)(4)]	1	1	1	1	1	1	1
PT2 [(2)] **+ 8-channel VoIP4E + 16-channel VoIP4E + 32-channel VoIP4E**	4	4	4	1	1	1	1
CS1	4	4	4	3	3	3	3
CA1	3	3	3	3	3	3	3
CP1	8	8	8	3	3	3	3
MUM	10	10	10	3	3	3	3
Equipment cards	12	26	40	3	6	3	3
LA16X	12	26	40	3	6	3	3
LA16X-8	12	26	40	3	6	3	3
LA8	12	12	12	3	6	3	3
LN16X	12	26	32	3	6	3	3
LN16X-8	12	26	32	3	6	3	3
LN8	12	12	12	3	6	3	3
LM8	12	12	12	3	6	3	3
LH8	12	12	12	3	6	3	3
LH16X	12	26	40	3	6	3	3
LH16X-8	12	26	40	3	6	3	3
LR4 LR4-DTOC	12	12	12	3	6	3	3
LI1	12	12	12	3	6	3	3
BTX	1	1	1	1	1	1	1

TABLEAU 3.3 LIST OF THE SUB-ASSEMBLIES IN AXL, AXS, AXS12 AND AXS6 IPBXS

(1) If this figure is reached: equipment cards cannot be added.
if the number of CLX cards is below 10: any equipment card can be added.

(2) The total number of LD4, LD4N, LD4X, IPS, PT2 and LT2 cards is ≤10.

(3) The LD4, LD4N, LD4X and LT2 synchronising cards must be located in slots 0 to 5 of the AXL main cabinet when they are to be used to provide the carrier (RTCP) reference clocks for the main card.

(4) 1 IPS card maximum per system.

3.5 *Configuration rules*

3.5.1 AXD iPBX

3.5.1.1 AXD main cabinet

An AXD iPBX contains 16 slots numbered from 00 to 15, corresponding to the following physical positions:

<table>
<tr><td colspan="2">(C) IUCVD</td><td rowspan="3">Power supply module 2
(E)</td></tr>
<tr><td colspan="2">(B) UCV-D (RUCV-D)</td></tr>
<tr><td colspan="2">(A) UCV-D (RUCV-D)</td></tr>
<tr><td>01</td><td>00</td><td></td></tr>
<tr><td>03</td><td>02</td><td></td></tr>
<tr><td>05</td><td>04</td><td rowspan="6">Power supply module 1
(D)</td></tr>
<tr><td>07</td><td>06</td></tr>
<tr><td>09</td><td>08</td></tr>
<tr><td>11</td><td>10</td></tr>
<tr><td>13</td><td>12</td></tr>
<tr><td>15</td><td>14</td></tr>
</table>

TABLEAU 3.4 SLOT NUMBERS ON THE BACKPLANE OF AN AXD IPBX

The following table presents the possible slots, as well as the restrictions concerning the various Aastra XD expansion cards in the main cabinet:

AXD main cabinet																
BACKPLANE SLOT	**1-00**	**1-01**	**1-02**	**1-03**	**1-04**	**1-05**	**1-06**	**1-07**	**1-08**	**1-09**	**1-10**	**1-11**	**1-12**	**1-13**	**1-14**	**1-15**
SYNCHRONISING POSITION	**0 (H0)**	**1 (H1)**	**2 (H2)**	**3 (H3)**	**4 (H4)**	**5 (H5)**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**
CLX cards																
LD4/LD4N/LD4X without ADPCM*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not	Not
LD4/LD4N with ADPCM	#8	#9	#10	#11	#12	#13	Yes	Yes	Not	Not	Not	Not	Not	Not	Not	Not
LD4X with ADPCM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not	Not
LT2*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not	Not
IPS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PT2 without VOIP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not	Not
PT2 8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not	Not
PT2 16	#8	#9	#10	#11	#12	#13	Yes	Yes	Not	Not	Not	Not	Not	Not	Not	Not
PT2 32	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not	Not
CS1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not	Not
CA1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not	Not
CP1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not	Not
MUM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not	Not
Equipment cards																
LA16X	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not	Not
LA16X-8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not	Not
LA8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not	Not
LN16X	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not	Not
LN16X-8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not	Not
LN8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not	Not
LM8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not	Not
LH8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not	Not
LH16X	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not	Not
LH16X-8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not	Not
LR4	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not	Not
LI1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not	Not
BTX	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

TABLEAU 3.5 POSSIBLE BASIC AXD IPBX BACK PLANE EQUIPMENT CONFIGURATION

* The LD4, LD4N, LD4X and LT2 synchronising cards must be located in slots 0 to 5 of the main cabinet when they are to be used to provide the reference clocks for the main card.

Understanding Tableau 3.5 :

- Synchronising position: indicates a synchronising position. The H0 clock signal in position 1-00 has priority over H1, H2, H3, H4 and H5 which have the same priority level.
- Yes: indicates that the card concerned can be equipped.
- No: indicates that the card concerned cannot be equipped.

- #8 to #13: indicates that the card can be equipped if no card in the short list is installed in slot n in the main cabinet.

  Exemple : If a PT2 + VOIP 16 card is installed in slot 1-00 (#8), a card from the short list cannot be installed in slot 1-08, but a card from the full list can be installed. If a PT2 + VOIP 16 card is installed in slot 1-00 (#9), a card from the short list cannot be installed in slot 1-09, but a card from the full list can be installed.

  Exemple : If an LD4 or LD4N card is installed in slot 1-00 (#8), a card from the short list cannot be installed in slot 1-08, but a card from the full list can be installed.

  - Short list: LA8, LN8, LM8, LH8, LI1, LR4, CP1, 8-channel PT2, MUM and 16-channel PT2, LD4, LD4N for slots 00 to 05.
  - Full list: LA16X, LN16X, LA16X-8, LN16X-8, LH16X, LH16X-8, CS1, CA1, IPS, 32-channel PT2, LT2, BTX. LD4X, 0-channel PT2 0.

3.5.1.2 A2XD and A3XD expansion cabinet

The slots in an expansion cabinet can only be fitted with certain equipment cards:

CARDS	A2XD and A3XD **EXPANSION CABINET**
CLX cards	
LD4/LD4N/LD4X	Not
LT2	Not
IPS	Yes
PT2 8,16,32 channels	Not
CS1	Not
CA1	Not
CP1	Not
MUM	Not
Equipment cards	
LA16X	Yes
LA16X-8	Yes
LA8	Not
LN16X	Yes
LN16X-8	Yes
LN8	Not
LM8	Not
LH8	Not
LH16X	Yes
LH16X-8	Yes
LR4	Not
LI1	Not
BTX	Yes

TABLEAU 3.6 POSSIBLE CONFIGURATIONS OF THE TWO EXPANSION BACKPLANES OF AN AXD IPBX

3.5.2 AXL iPBX

An AXL iPBX contains 14 slots numbered from 00 to 13, corresponding to the following physical slots:

UCV-L (RUCV-L)	
01	00
03	02
05	04
07	06
09	08
11	10
13	12

TABLEAU 3.7 SLOT NUMBERS ON THE BACKPLANE OF AN AXL IPBX

3.5.2.1 AXL main cabinet

The following table presents the possible slots, as well as the restrictions concerning the various Aastra XS/XL range expansion cards of the main cabinet:

	AXL main cabinet													
BACKPLANE SLOT	**1-00**	**1-01**	**1-02**	**1-03**	**1-04**	**1-05**	**1-06**	**1-07**	**1-08**	**1-09**	**1-10**	**1-11**	**1-12**	**1-13**
SYNCHRONISING POSITION	**0 (H0)**	**1 (H1)**	**2 (H2)**	**3 (H3)**	**4 (H4)**	**5 (H5)**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**
CLX cards														
LD4/LD4N/LD4X without ADPCM*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LD4/LD4N with ADPCM	#8	#9	#10	#11	#12	#13	Yes	Yes	Not	Not	Not	Not	Not	Not
LD4X with ADPCM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LT2*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IPS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PT2 without VOIP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PT2 8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PT2 16	#8	#9	#10	#11	#12	#13	Yes	Yes	Not	Not	Not	Not	Not	Not
PT2 32	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CS1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CA1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CP1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
MUM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Equipment cards														
LA16X	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LA16X-8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LA8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LN16X	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LN16X-8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LN8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LM8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LH8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LH16X	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LH16X-8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LR4	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LI1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
BTX	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* The LD4, LD4N, LD4X and LT2 synchronising cards must be located in slots 0 to 5 of the main cabinet when they are to be used to provide the reference clocks for the main card.

TABLEAU 3.8 POSSIBLE BASIC AXL IPBX BACK PLANE EQUIPMENT CONFIGURATION

Understanding Tableau 3.8 :

- Synchronising position: indicates a synchronising position. The H0 clock signal in position 1-00 has priority over H1, H2, H3, H4 and H5 which have the same priority level.
- Yes: indicates that the card concerned can be equipped.
- No: indicates that the card concerned cannot be equipped.
- #8 to #13: indicates that the card can be equipped if no card in the short list is installed in slot n in the main cabinet.

  Exemple : If a PT2 + VOIP 16 card is installed in slot 1-00 (#8), a card from the short list cannot be installed in slot 1-08. If a PT2 + VOIP16 card is installed in 1-01 (#9), a card from the short list cannot be installed in 1-09...

  Exemple : If an LD4 or LD4N card is installed in slot 1-00 (#8), a card from the short list cannot be installed in slot 1-08, but a card from the full list can be installed.

  - Short list: LA8, LN8, LM8, LH8, LI1, LR4, CP1, 8-channel PT2, MUM and 16-channel PT2, LD4, LD4N for slots 00 to 05.
  - Full list: LA16X, LN16X, LA16X-8, LN16X-8, LH16X, LH16X-8, CS1, CA1, IPS, 32-channel PT2, LT2, BTX. LD4X, 0-channel PT2 0.

3.5.2.2 A2XL and A3XL expansion cabinets

The slots in an expansion cabinet can only be fitted with certain equipment cards:

Cards	A2XL and A3XL expansion cabinet
CLX cards	
LD4/LD4N/LD4X	Not
LT2	Not
IPS	Yes
PT2 8,16,32 channels	Not
CS1	Not
CA1	Not
CP1	Not
MUM	Not
Equipment cards	
LA16X	Yes
LA16X-8	Yes
LA8	Not
LN16X	Yes
LN16X-8	Yes
LN8	Not
LM8	Not
LH8	Not
LH16X	Yes
LH16X-8	Yes
LR4	Not
LI1	Not
BTX	Yes

TABLEAU 3.9 POSSIBLE CONFIGURATIONS OF THE TWO EXPANSION BACKPLANES OF AN AXL IPBX

3.5.3 AXS/AXS12/AXS6 iPBX

An AXS/AXS12/AXS6 iPBX contains 3 slots numbered from 00 to 02, corresponding to the following physical slots:

02	01	00
UCV-S		EXT1-S/EXT1-S12/ EXT1-S6

TABLEAU 3.10 SLOT NUMBERS ON THE BACKPLANE OF AN AXS/AXS12/AXS6 IPBX

The slots in a main cabinet can be fitted with all the Aastra X series cards.
The slots in an expansion cabinet can only be fitted with equipment cards.

Note : *The three main cabinet slots are synchronising positions. H0 (in position 1-00) has priority over H1 (in position 1-01), H2 (in position 1-02) and H3 (retrieved from the T0 interfaces built into EXT1-S/EXT1-S12/EXT1-S6) which have the same priority level.*

The following table summarises the possible slots, and gives restrictions concerning the various expansion cards of the AXS/AXS12/AXS iPBX:

CARDS	MAIN CABINET	EXPANSION CABINET	PARTICULAR CONSTRAINTS
CLX cards	Yes	Not	Limited to 3
LD4/LD4N/LD4X	Yes	Not	Limited to 3 (S0) Limited to 2 (DECT)
LT2	Yes	Not	Limited to 2
IPS	Yes	Yes	Limited to 1
PT2	Yes	Not	Limited to 1
CS1	Yes	Not	Limited to 3
CA1	Yes	Not	Limited to 3
CP1	Yes	Not	Limited to 3
MUM	Yes	Not	Limited to 3
Equipment cards	Yes	Yes	
LA8	Yes	Yes	
LA16X	Yes	Yes	
LN16X	Yes	Yes	
LA16X-8	Yes	Yes	
LN16X-8	Yes	Yes	
LN8	Yes	Yes	
LM8	Yes	Yes	
LH8	Yes	Yes	
LH16X	Yes	Yes	
LH16X-8	Yes	Yes	
LR4	Yes	Yes	
LI1	Yes	Yes	
BTX	Yes	Yes	Limited to 1

TABLEAU 3.11 POSSIBLE BASIC BACKPLANE AND EXTENSION EQUIPMENT CONFIGURATION OF AN AXS/AXS12/AXS6 IPBX

3.6 i-Button dongle and software locking

Certain optional features of the iPBX can be used only with a software key code.

A removable "i-Button" dongle (circuit in a metal box, similar to a battery) on the UCV (AXS/AXL) and IUCV-D (AXD) main card contains the iPBX identification number (this number can be displayed when the cabinet is started or via MMC). This number is used for unlocking optional software functions.

When replacing a UCV or IUCV-D card of an iPBX on site, restoring the software configuration of the new card and moving
the "i-Button" to the new card is sufficient to restore the same functional configuration of the iPBX, without any other action needed.

3.7 AXS/AXL/AXD iPBX SOFTWARE KEY CODES

The various functions which require a software key code are:

- Demonstration (number of days : 1 to 30)
- E-voicemail (yes/no)
- IVB interactivity (yes/no)
- Automated attendant (integrated voice mail server: yes/no)
- Hospital/hotel (yes/no): Multi-user EAI + prepayment EAI + secret code EAI + forwarding EAI
- Forwarding EAI (yes/no)
- Call distribution (ACD) (yes/no): Hunt group EAI + Call distribution EAI + Forwarding EAI + Listening/intervention + 128 bytes > ticket
- Listening/intervention (yes/no)
- 128 bytes > ticket (yes/no)
- Voice encryption (yes/no)
- Disa (yes/no)
- Directory record (number of records, by hundreds)
- LDAP synchronisation (number of records, by hundreds)
- SIP trunk links (number of simultaneous calls)
- Aastra IP mobiles (1 to 500 terminals)
- Aastra IP terminals (1 to 500 terminals)
- Aastra SIP terminals (1 to 500 terminals)
- IP terminals (1 to 500 terminals)
- IP dual homing (1 to 500 terminals)
- VTI/XML CTI (1 to 256)

- CSTA CTI (1 to 2048 objects)
- V24 interactive voice mail server (1 to 16 accesses)
- Extended Q23 interactive voice mail server (1 to 64 accesses)
- IP XML interactive voice mail server (1 to 64 accesses)
- Sgml/ATDC XML (1 to 64 accesses)

3.8 Functional description Plate 9.1 to Plate 9.4)

An iPBX can be broken down functionally into several functional chains:

- Duplication (Aastra XD only)
- Command and processing unit
- Network and terminal interface
- Synchronisation
- Defence
- Power supply
- Ventilation.

3.8.1 Command and processing unit

The command and processing unit chain is ensured by the main card. It manages the following features:

- Duplex and start logic (Aastra XD only)
- Data and voice switching
- Signal processing
- Voice mail server
- Defence (management of interface card statuses)
- Command management
- Synchronisation

3.8.1.1 Data and voice switching function

Communication switching is provided by a switching matrix acting as the crossroads for the various data and voice messages.

The switching matrix is used to transfer a message, a signal (speech) or digitised data:

- From one expansion card to another expansion card
- From the signal processing module or the voice mail server module (voice auxiliaries) of the main card to an expansion card.

This matrix routes the messages received over a PCM link, called a junction, to another expansion card or module on the main card, through another internal PCM link.

Each junction includes 32 Time Slots (TS) which are each used to route one voice message or digitised data.

Certain TSs of a specific junction are assigned to the various subassemblies of the iPBX connected to the matrix.

The TSs are exchanged between the various subassemblies of the iPBX over a synchronous bus.

3.8.1.2 Duplex and start logic function (Aastra XD only)

Duplex logic

The main function of the duplex logic is to determine which of the two UCV-D cards of a duplex system is active (see Section 3.8.2). It consists of:

- An exclusion hardware logic which guarantees that only one of the two cards can be active at a given moment
- Commands (Normal/Maintenance, Start/Stop) and indicators (Operational, Active, Out of service) on the front panel.
- Command and status registers.

Both cards exchange status signals, enabling them to know each other's status.

Starting

A card can only start, in the application sense of it, when its status changes to "Active". After the cabinet is powered on, the UCV-D card runs start-up tests. The behaviour then varies, depending on whether the system is simplex or duplex:

- In simplex mode, the status of the UCV-D card changes immediately to "Active".
- In duplex mode, the status of the UCV-D card changes to "Active" if it is not out of service and if the other UCV-D card is not itself "Active".

3.8.1.3 Signal processing function

The signal processing function is ensured by a module on the main card, and comprises:

- generation of music on-hold,

Nota : *Music-on-hold can be replaced by external music. The level of external music-on-hold is stored in the memory of the UCV/UCV-D card, which- can be programmed using AMP.*

- Generating tone signals
- Detecting tones
- Sending and receiving multiple frequency signals

- Managing four-way conference
- Modem function (signal modulation and demodulation)
- Managing the signals delivered by the "class" sets,
- Generating ringing current control.

3.8.1.4 Voice mail server function

Voice mail server function is ensured by a "Voice auxiliaries" module.

This module ensures the following functions:

- Remote polling of answering machine for each of the sets subscribed to the iPBX, configurable as a basic answering machine

  A voice mail box can be associated with each directory number recorded on the iPBX.
- IVS ensured by:
  - integration of a predefined voice prompt used by the caller (through DTMF code detection) to browse through a series of menus providing access to the functions offered or a particular subscriber,
  - voice prompt storage,
  - calls on hold,
  - forwarding to music or on-hold messages,
  - direct forwarding to an attendant,
- Storing and broadcasting synchronous announcements (synchronised with start of call).

3.8.1.5 Defence function

See section3.8.5

3.8.1.6 Command management function

Command management function:

- Prompts the matrix to direct one junction to another junction
- asks signal processing to generate or listen to a signal,
- Prompts the voice mail server to broadcast a message, announcement or music
- Supervises the various expansion cards through the asynchronous system bus.

3.8.1.7 Synchronisation function

See 3.8.4

3.8.2 Connection to the communication networks and terminals

Connection to communication networks and terminals is provided by expansion cards and interfaces located on the EXT1-S card (AXS iPBX), and by a LAN interface only on UCV-L (AXL iPBX) and UCV-D (AXS iPBX) cards.

These expansion cards can be divided into two categories:

- CLX cards. They interface with the external applications connected to the iPBX through digital networks. CLX cards are smart cards (with microprocessor) with access through the system bus to the memory area of the UCV card. This category includes:
  - IP gateway cards used for interfacing with:
    - IP applications: PT2 cards
    - IP sets: PT2 cards fitted with a VoIP daughter card, IPS card
  - cards ensuring data transmission in packet mode over an X25 network:
    - CS1 cards, X25 network interface cards complying with the HDLC or PSDN standard
    - CS1 cards, X25 network interface cards complying with the ISDN standard
  - cards interfacing with asynchronous data transmission terminals through RS232 links: CA1 card
  - intersite voice/fax communication multiplexer cards: MUM card
  - cards used to interface PCM channels with other private systems: LT2 cards
  - cards interfacing with ISDN networks: LT2, LD4, LD4N and LD4X; these interfaces also send the synchronisation clocks from a public network to the main card.
  - cards for connecting with DECT base stations: LD4, LD4N and LD4X card.
- The equipment cards including the subscriber cards and interface cards with analogue lines. Equipment cards are cards without microprocessor which do not have access to the memory area of the UCV CPU cards. This category includes:
  - cards for connecting to analogue sets: LAx cards,
  - cards for connecting to digital sets: LNx cards,
  - cards for connecting to analogue sets and digital sets: LMx cards,
  - cards for connecting to hotel analogue sets: LH8, LH16X and LH16X-8 cards,
  - the intersite link card through analogue lines: LI1 card,
  - the card for connecting to PSTN analogue lines or a charging server: LR4 card.

  These cards, installed in the main cabinet or an expansion cabinet (LAx and LNx cards only) communicate with the central and processing unit of the UCV cards, through:
  - a synchronous bus, the equipment bus, for conveying the voice or data information through PCM TSs
  - an asynchronous system bus, for exchanging their status and command

information.

The cards located in an expansion cabinet communicate with the UCV card or the active UCV-D card of the main cabinet through the RUCV card or RUCV-D card.

The RUCV/RUCV-D cards are installed instead of the UCV/UCV-D cards in the expansion cabinet. Their main function is to distribute the line equipment bus and synchronous junctions to the expansion card slots.

3.8.3 Duplication (Aastra XD)

Duplication of CPU cards

- Duplication of UCV-D cards: two UCV-D CPU cards (duplex configuration) can be fitted in the Aastra XD main cabinet. A single card is enough to run the entire system. In a duplex configuration, one UCV-D card is active and the other passive. Interfaces with the system bus and the equipment bus of both UCV-D cards are connected together to the back plane. Only the interface of the active card is validated. Using the duplex logic, the system determines which of the two UCV-D cards is active and ensures that only one of the two cards can be active at a given moment.

  After a switchover the duration of which depends on the configuration (15 s. to 1 min.), the passive CPU card takes over and becomes active in the following three cases :

  - If the active card is removed
  - If the active card remains idle for 2 minutes
  - If a hardware failure is detected on the active UCV-D card (in this case, a hardware fault detection is performed. The unavailability time on the cabinet can, therefore, be up to 3 minutes.).

  Nota : *Since an anomaly causes software reset, it cannot trigger a switchover to the passive card. The active card restarts.*

  A switchover can be triggered by MMC (upon the installer's request), with a view to performing duplex function related tests.

- Duplication of RUCV-D cards: in an expansion cabinet, the equipment buses and synchronous buses of the two RUCV-D cards are connected together to the back plane, the RUCV-D card connected to the active UCV-D card takes control of the buses.

  A hardware fault detected on the RUCV-D card connected to the active UCV-D card triggers a switchover of the UCV-D card. The passive UCV-D card then takes over. Of course, this system performs this switchover only if it does not encounter serious anomalies on the second UCV-D card.

  After a switchover the duration of which depends on the configuration (15 s. to 1 min.), the passive CPU card takes over and becomes active in the following three cases :

  - If the active card is removed
  - If the active card remains idle for 2 minutes
  - If a hardware failure is detected on the active UCV-D card (in this case, a

hardware fault detection is performed. The unavailability time on the cabinet can, therefore, be up to 3 minutes.).

Duplicating the hardware functions

During a switchover, once the passive card has become active and functional, all the hardware functions become automatically available again, through hardware function redundancy on both cards, and through the centralisation of the front panel connections on the IUCV-D card.

IP port duplication

Thanks to its integration into the CPU card, the integrated 10/100 T-X Ethernet port is duplicated. Therefore, all the applications that use this port to connect to the iPBX benefit from this IP link security. After CPU card switchover, the IP address of this integrated port remains the same. The MAC address, on the other hand, changes.

Data synchronisation

Data synchronisation is performed progressively, to bring the data on the passive card to the same level as the active card.

This synchronisation guarantees service continuity after switchover, for the following functions:

- Subscriber configuration
- Network configuration
- Customisation of digital sets
- Programming functions (except last number redial and automatic callback)
- DECT service
- Directory numbers.

All the sets reconnect automatically. Attendant console reactivation remains at the operator’s discretion.

Software synchronisation

The system software package and application are synchronised after each software upgrade on the active card, to bring the software on the passive card to the same level as the active card: change of version, change of MMC language.

This synchronisation is done once the new software release has been validated by the iPBX or by the management centre.

This synchronisation guarantees service continuity after switchover, for the following functions:

- active software release, system and application
- digital set languages and MMC languages

Power supply duplication

Aastra XD can receive two ADS 350XD or ADS 300XD power sypply modules (simplex configuration with secure power supply and duplex configuration) in the same cabinet (main cabinet and expansion cabinets), see Section 3.8.6.

Attention :*Both ADS350XD and ADS300XD in the same cabinet is not possible.*

Duplication of integrated services

The following functions are duplicated on Aastra XD:

- Integrated call distribution (integrated ACD, music on hold, spoken announcements).

  The answering service configuration and the associated voice messages (music, spoken announcements) are automatically updated on the passive card each time the answering service is modified by the management centre, or after a new CPU card is added in the system, in line with the answering service configuration.

- Integrated IVS

  The IVS configuration and voice messages are automatically updated on the passive card each time the answering service is modified by the management centre, or after a new CPU card is added in the system, in line with the answering service configuration.

- Voice mail
- Charge
  - Since charge records are issued at the end of a call, only the records for on-going calls will be lost during reloading or switchover.

3.8.4 Synchronisation chain (Plate 9.1)

The synchronisation function ensures that an iPBX or an iPBX network is synchronised on a public digital network, and provides the multi-frame synchronisation required for DECT base stations.

3.8.4.1 Synchronisation of an isolated or master iPBX in a multi-site network

The UCV CPU card contains a time base used to synchronise the iPBX on an external reference clock. The latter can be chosen from 6 clocks extracted from the digital connections of an RTCP network (T0 or T2) through LT2, LD4, LD4N and LD4X synchronising expansion cards.

For an AXS, there are 4 reference external clocks on the UCV-S CPU card, 3 of which are taken from expansion cards and one from the ISDN accesses integrated in the EXT1S card.

These LT2, LD4, LD4N and LD4X cards must be fitted in slots 0 to 5 in the main cabinet of the AXL and AXD iPBXs (slots 0 to 2 for AXS). All the EXT1-S ISDN accesses are synchronising.

The first active digital network card synchronises the system. It maintains this as long as its clock is valid, and in the absence of higher priority clocks. Otherwise, a new clock is sought.

The time base generates and distributes two synchronisation signals to the cards in the cabinet, and possibly to the other iPBXs in a multisite configuration:

- An HBIT synchronisation clock
- An HDECT synchronisation clock derived from the bit synchronisation

  The external reference clocks can belong to 2 priority classes (high priority and low priority); the clock provided by the card located in slot 0 is high priority and the other 5 clocks are low priority.

  The reference clock, selected according to its priority class, can be used to reset the internal oscillator present on the main card.

When a reference clock is no longer valid, the oscillator is set on:

- An average of the last values stored
- After reset, a value programmed at the factory.

The number of the expansion card generating the reference clock is stored by the operating software.

3.8.4.2 Management of the master/slave mode (multisite network)

For a multisite network with DECT base stations, the various Aastra XS/XL/XD iPBXs require the same synchronisation signal.

Nota : *The AXS12 iPBX allows multi-site DECT synchronisation through the wiring of a third pair on the base stations.*

In this case, DECT synchronisation is provided by one iPBX to the others; it can also be duplicated if two iPBXs have a digital connection to the RTCP.

Nota : *One of the 2 has priority; apart from these 2 iPBXs, all the other iPBXs in the Aastra XS/XL/XD range can only receive the synchronisation. The UCVX card has a synchronisation port which can work in Priority Master mode (only one in the network), Non Priority Master mode (only one in the network) or Slave mode.*

The primary ports of the two Master cabinets exchange status signals which enable an internal logic to select the Active Master iPBX that provides synchronisation to the multi-sites, and the Passive Master iPBX which acts like a Slave iPBX.

For an Aastra XD, the synchronisation ports are available on the IUCV-D card.

The synchronisation ports of the two UCV-D cards are wired at the same time on the two IUCV-D connectors. Clock signal validation, both for the primary port and the secondary port, takes place only on the active card.

Here, the primary synchronisation port provides the bit clock and the DECT multiframe clock.

Nota : *The DECT base stations connected to the integrated S0 accesses of the EXT1-S and EXT1-S12 cards are synchronised (management of the M bit in the S frame).*

By default, ex factory or after total reset, the iPBX is configured for operation in Master and Non Priority mode. These 2 parameters which set the operating mode can be configured from the operating console (see Section1.3, Document 6). Their current status is stored in the iPBX and locked.

3.8.4.3 *Propagation of the synchronisations inside a multisite network (Plate 9.4)*

The UCV/UCV-D card includes 2 synchronisation ports used to propagate synchronisation inside a multi-site network.

The two master iPBXs are interconnected through their primary ports; their secondary ports are each connected to the primary port of a slave iPBX, whose secondary port is itself connected to the primary port of another slave iPBX…

Synchronisation is then distributed from peer to peer within the multisite network.

Nota : *In case of failure or loss of synchronisation on the public network of the priority master iPBX, the non priority master iPBX provides synchronisation.*

The secondary port of the iPBX provides a copy of the synchronisation signals of the primary port. Synchronisation continuity is maintained when an iPBX fails or is powered off.

If any of the 2 bit or DECT clocks is lost, the iPBX time base changes to local mode then sends its own clock signals to its DECT base stations and secondary port.

In a multisite system, the bit clock of the master system is transmitted together with the DECT synchro signal, and is the top priority clock for slave cabinets.

3.8.5 Defence chain

3.8.5.1 *Overview*

The defence chain is provided by the various subassemblies fitted in the iPBX. Its role is to advise the operator of malfunctions of one or more items.

It includes the following functions:

- Monitoring
- Alarm analysis
- Self-protection.

3.8.5.2 Monitoring

Monitoring is ensured through:

- Autotests:

  The various subassemblies of the iPBX (power supply unit, cards, main card functional modules) include software or hardware self-monitoring devices; their condition is broadcast to the central unit and triggers their resetting in case of fault, for CLX cards.

- Software watchdog on the UCV/UCV-D card
- Tachometric sensors for the fans, built into the power supply module and into the ventilation module
- Temperature sensor built into the power supply module and ventilation module. When the module's internal temperature exceeds a certain threshold (fixed by the manufacturer), an alarm is activated.

3.8.5.3 Alarm management

Alarm management is ensured by maintenance software present on the main card. The alarms managed are those of the subassemblies in the iPBX, but also external alarms.

The main card collects the status of:

- Expansion cards
- Peripheral devices and links to the various cards
- Its modules and internal interfaces
- The iformation supplied by external sensors available to the customer (4 maximum).

A CLX card is declared faulty by the UCV/UCV-D in one of the following cases:

- If the card sends no reply
- If the card sends invalid replies.

A CLX card declared faulty is reset automatically by the UCV/UCV-D card then, if the fault persists, deactivated.

A presence test is performed regularly by the UCV/UCV-D card on the equipment cards. These are declared faulty when they no longer send replies or send an invalid identifier.

An anomaly detected in the configuration triggers the following:

- Recording of a fault report in the log
- A fail-safe action, initiated and executed by the maintenance software
- Recording of an action report message in the log.

The status of the subassemblies, centralised by the main card, can be viewed and managed with the AMP, in the log.

3.8.5.4 Self protection

Self protection of the iPBXs is ensured by the remote supply module:

- Isolating the faulty elements using the power supply protection fuses
- Monitoring the fans (see Section 3.8.7).

3.8.6 Power supply chain (figure 3.23)

3.8.6.1 Aastra XD

Aastra XD cabinets are powered by one or two plug-in power supply units (type ADS350XD or ADS300XD).

Caution : *Both ADS350XD and ADS300XD in the same cabinet is not possible.*

- In a simplex configuration with secure power supply and in a duplex configuration, each cabinet is power up by two power supply units. The power supply modules then work in load-sharing mode. If a power supply unit fails, the other takes over the load (only one unit is enough to sustain the full load required by a cabinet). This switchover is transparent for the cabinet equipment. There is, thus, no service interruption.

Nota : *The power supply modules of a main cabinet cannot supply power to an expansion cabinet just like the power supply modules of an expansion cabinet cannot supply power to a main cabinet.*

- In a simplex configuration, the cabinets are powered up by a single power supply unit. A ventilation module is installed in place of the second power supply module. This ventilation module comprises two fans powered up and supervised by the power supply module.

The internal power supplies are distributed by a converter supplied with alternating voltage: 115/230 V - 50/60 Hz.

The power supply module provides the direct low voltage power supplies for:

- The different iPBX cards, voltages supplied via the back plane:
  - power supplies required by their internal circuits
  - ringing current (for certain equipment cards)
  - set line current (-48 V)

    Each back plane connector of the AXD iPBXs hosting an expansion card has advanced contacts for earth and +5 V enabling hot plugging, during cabinet operation, of the CLX cards and new generation equipment cards (Lx16-X).
- The fans on the power supply and ventilation module(s)

An optional, 48 V backup battery, connected to the back of the cabinet, can be installed to provide direct power supply to the converter in case of mains failure (see Specifications in Section 3.8.7.1).

The mains is distributed to the power supply module's rectifier through:

- A mains switch used to power the supply module on or off
- Two fuses.

A converter inside the power supply module converts the 48 V power supply generated by the battery or rectifier to the low voltages required by the various subassemblies of the iPBX.

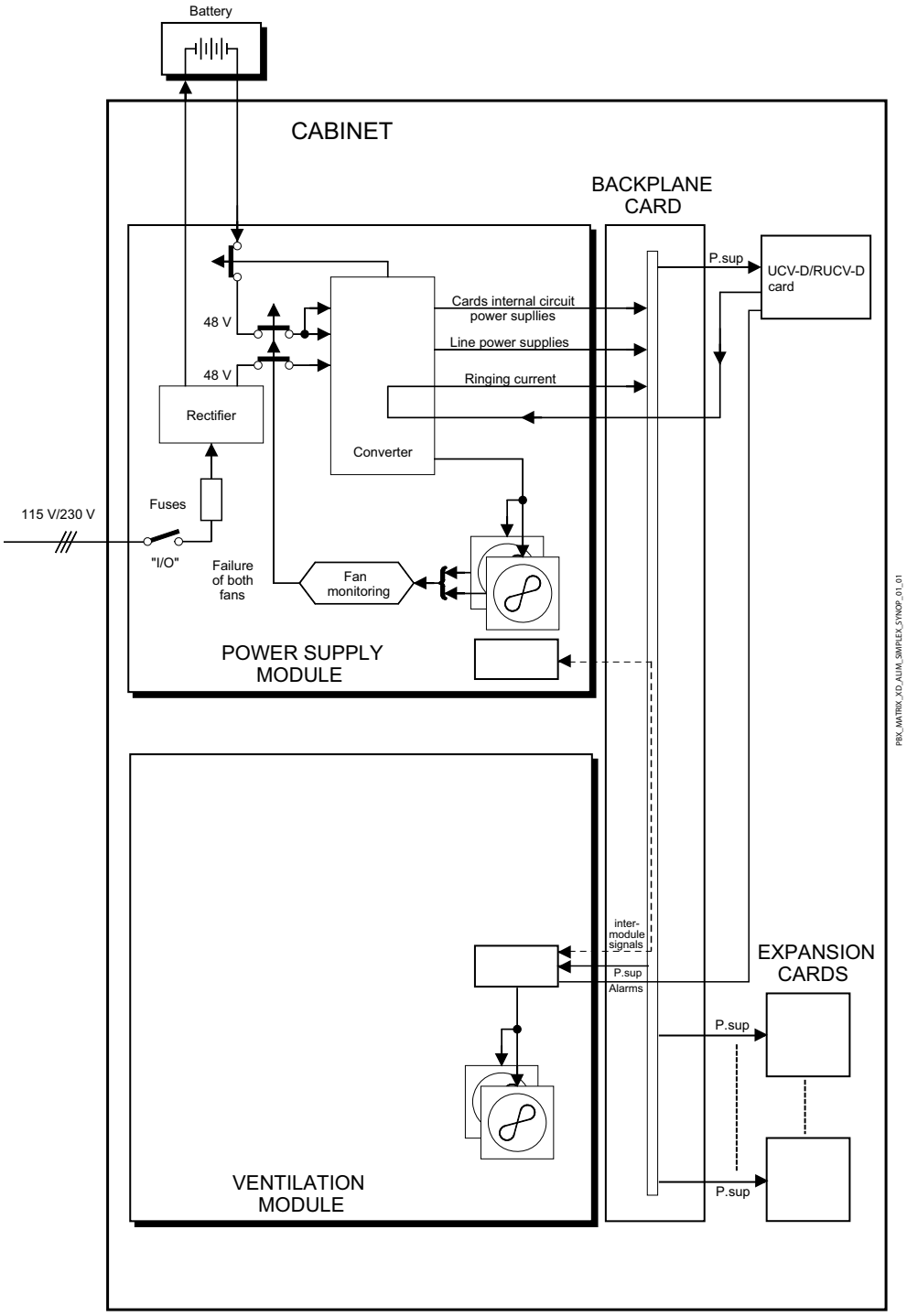


Figure 3.21 *BLOCK DIAGRAM OF THE POWER SUPPLY CHAIN IN AN AXD CABINET IN SIMPLEX CONFIGURATION*

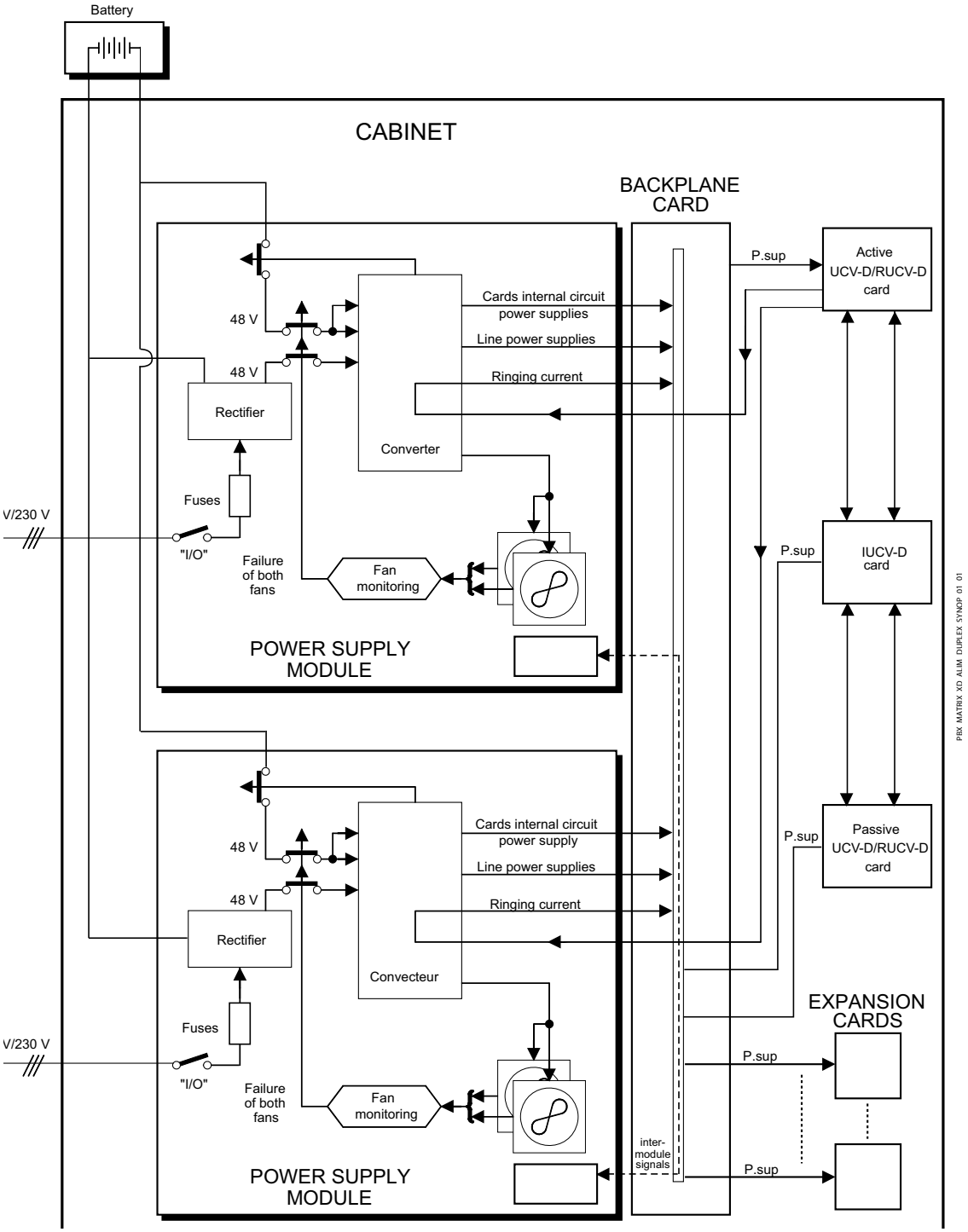


Figure 3.22 *BLOCK DIAGRAM OF THE POWER SUPPLY CHAIN IN AN AXD CABINET IN DUPLEX CONFIGURATION.*

3.8.6.2 Aastra XS/XL

The internal power supplies are distributed by a converter supplied with alternating voltage: 115/230 V - 50/60 Hz.

This power supply module provides the direct low voltage power supplies for:

- The various cards in the iPBXs, voltages supplied via the back plane (for AXL iPBX) and via a specific connector (for AXS, AXS12 and AXS6 iPBXs):
  - power supplies required by their internal circuits
  - ringing current (for certain equipment cards)
  - set line current (-48 V)

    Each back plane connector of the AXL iPBXs hosting an expansion card has advanced contacts for earthing and +5 V for hot plugging, during cabinet operation, of the CLX cards and new generation equipment cards (Lx16-X).
- To the fan(s) of the power supply module
- To be delivered over an ISDN connection: 40V voltage (only for ADS300X power supply on XL).

An optional, 48 V backup battery, connected to the power supply module, can be installed to provide direct power supply to the converter in case of mains failure (see Specifications in Section 3.8.7.1).

The mains is distributed to the power supply module's rectifier through:

- A mains switch used to power the supply module on or off
- Two fuses.

A converter inside the power supply module converts the 48 V power supply generated by the battery or rectifier to the low voltages required by the various subassemblies of the iPBX.

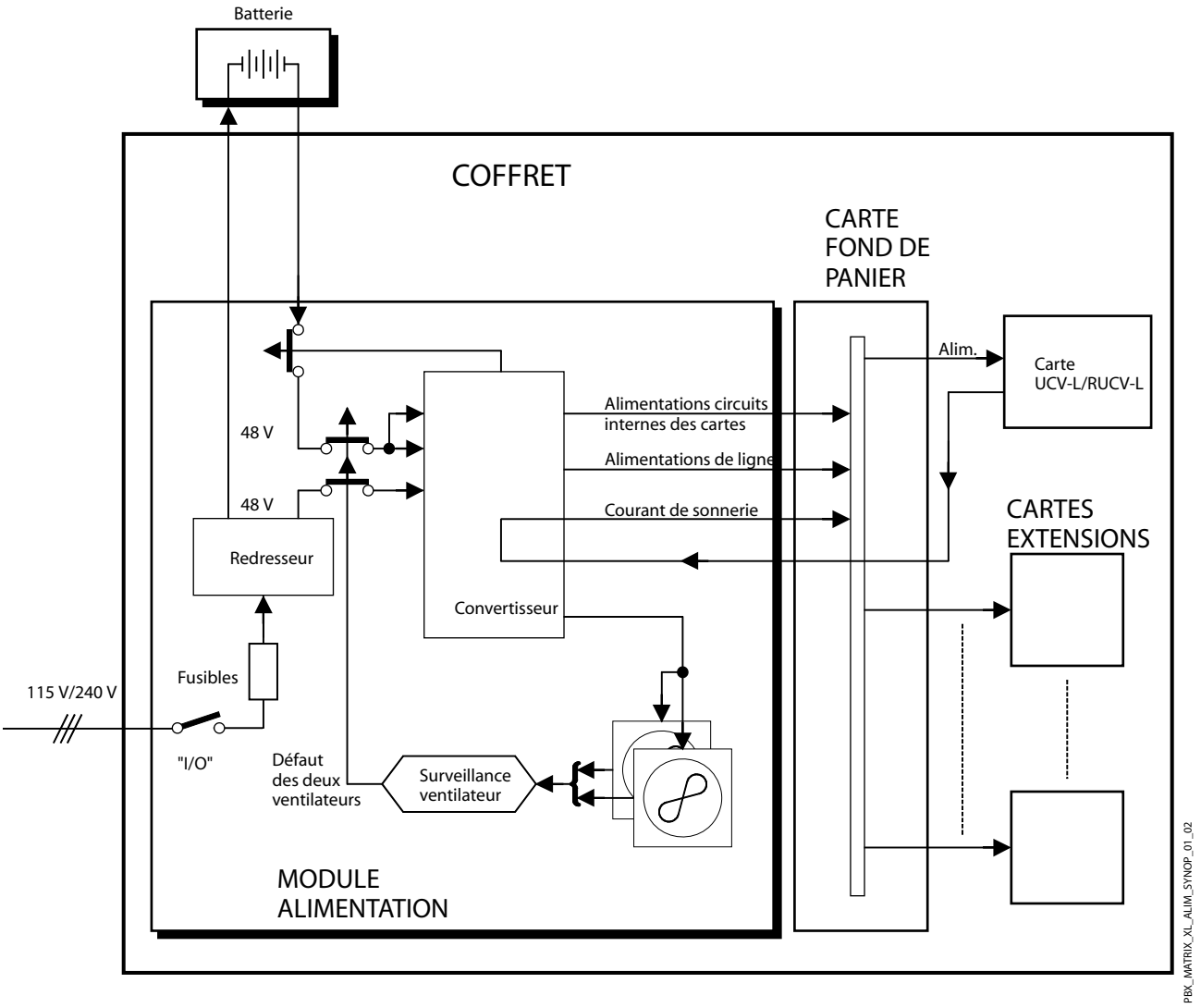


Figure 3.23 *BLOCK DIAGRAM OF THE POWER SUPPLY CHAIN IN AN AXL CABINET*

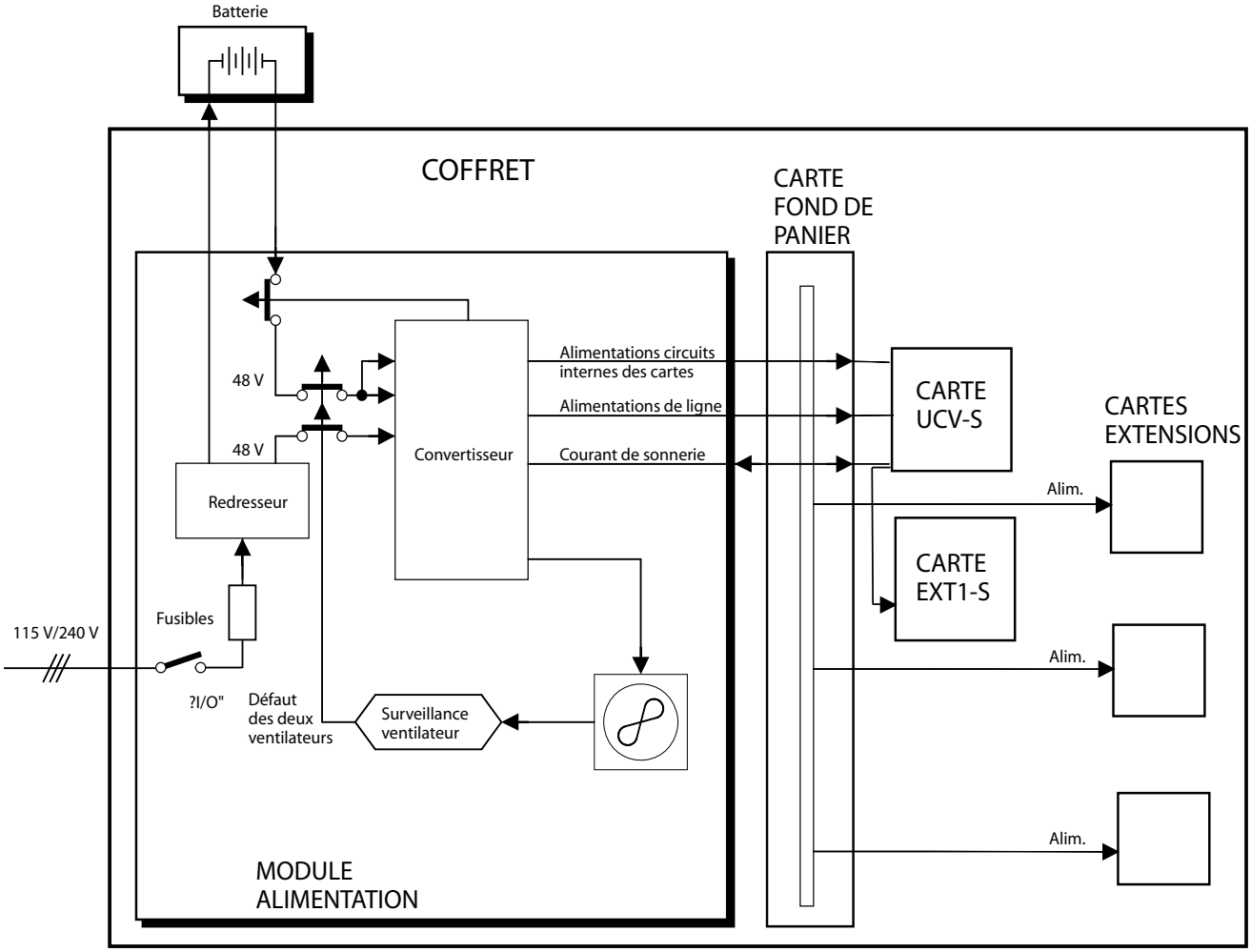


Figure 3.24 Block diagram of the power supply chain in an AXS cabinet

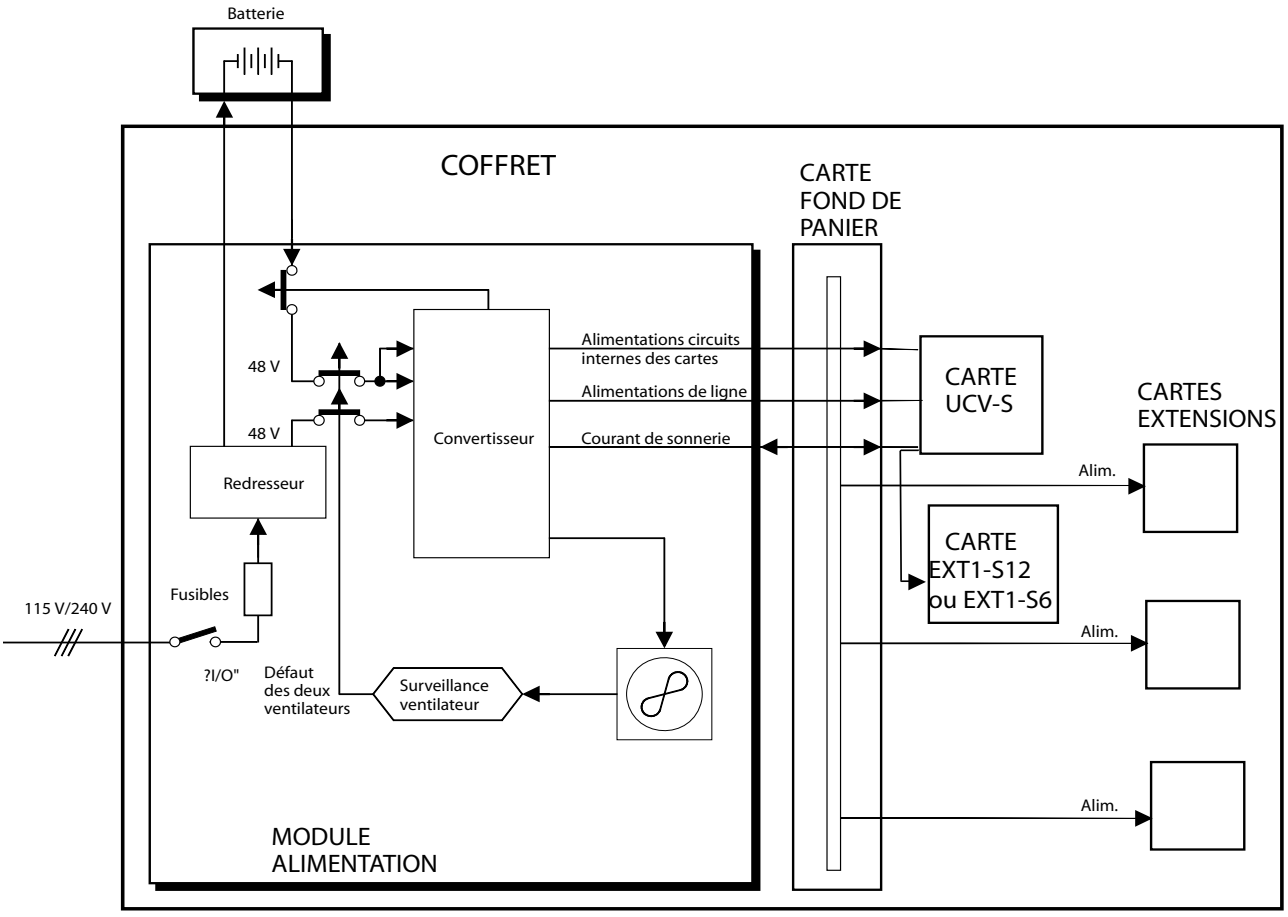


Figure 3.25 Block diagram of the power supply chain on an AXS12/AXS6 cabinet

3.8.7 Internal monitoring of AXS/AXL/AXD

A monitoring device built into the power supply module prevents full discharging of the battery in the absence of mains, or in case of rectifier failure/shutdown.

The power supply module is fitted with:

- 4 fans (AXD), that is 2 fans per power supply module and per ventilation module, or
- 2 fans (AXL), or
- 1 fan (AXS, AXS12 and AXS6).

The converter stops when the fan(s) is (are) detected as faulty (tachometric monitoring inactive). This condition is ignored for 3 seconds (AXS/AXL) or 90 seconds (AXD) after the converter is powered up, to allow the replacement of a faulty power supply module or ventilation module.

3.8.7.1 Battery

3.8.7.1.1 Description

AXL, AXS, AXS12 and AXS6 iPBX

An external, optional backup battery can be installed, to protect the iPBX from a power supply failure and prevent service disruption and loss of critical data.

When an iPBX has several cabinets, a battery is available for each cabinet. However, the same battery can be connected at the same time on the 2 or 3 cabinets of an AXD or AXL or the 2 cabinets of an AXS. In this case, check that the battery can withstand the charging current (2A per ADS300XD/ADS350XD power unit for charging the battery, 6A per ADS300X/ADS350XD (AXL) power unit and 3 A per ADS150X (AXS) power unit).

- One battery per cabinet:
  For proper operation (standard configuration), use a battery complying with the specifications indicated in the following table:

BATTERY SPECIFICATIONS	CAPACITY
Number of battery elements	4
Voltage	4 x 12 V (12 V per battery element)
Capacity (amp/hours)	AXD and AXL: 17 Ah AXS/AXS12/AXS6: 7,5 Ah
Battery autonomy	AXD and AXL: 4 h AXS/AXS12/AXS6: 4 h

TABLEAU 3.12 AXD, AXL, AXS, AXS12 AND AXS6 IPBX BATTERY CHARACTERISTICS

- Battery in parallel on an A3XD or A3XL iPBX (3 cabinets)
  If you do not wish to use 3 batteries (one per cabinet), but only one for the 3 cabinets together, use a battery complying with the specifications in the following table:

BATTERY SPECIFICATIONS	CAPACITY
Number of battery elements (battery type YUASA NP38-12)	4
Voltage	4 x 12 V (12 V per battery element)
Capacity (amp/hours)	38 Ah
Battery autonomy	4 h

TABLEAU 3.13 A3XD OR A3XL IPBX BATTERY CHARACTERISTICS

Attention : *(1) Do not connect an AXL iPBX and an AXS iPBX to the same battery pack.*
(2) Do not connect an AXD iPBX and another Aastra iPBX (for instance AXL or AXS) to the same battery pack.

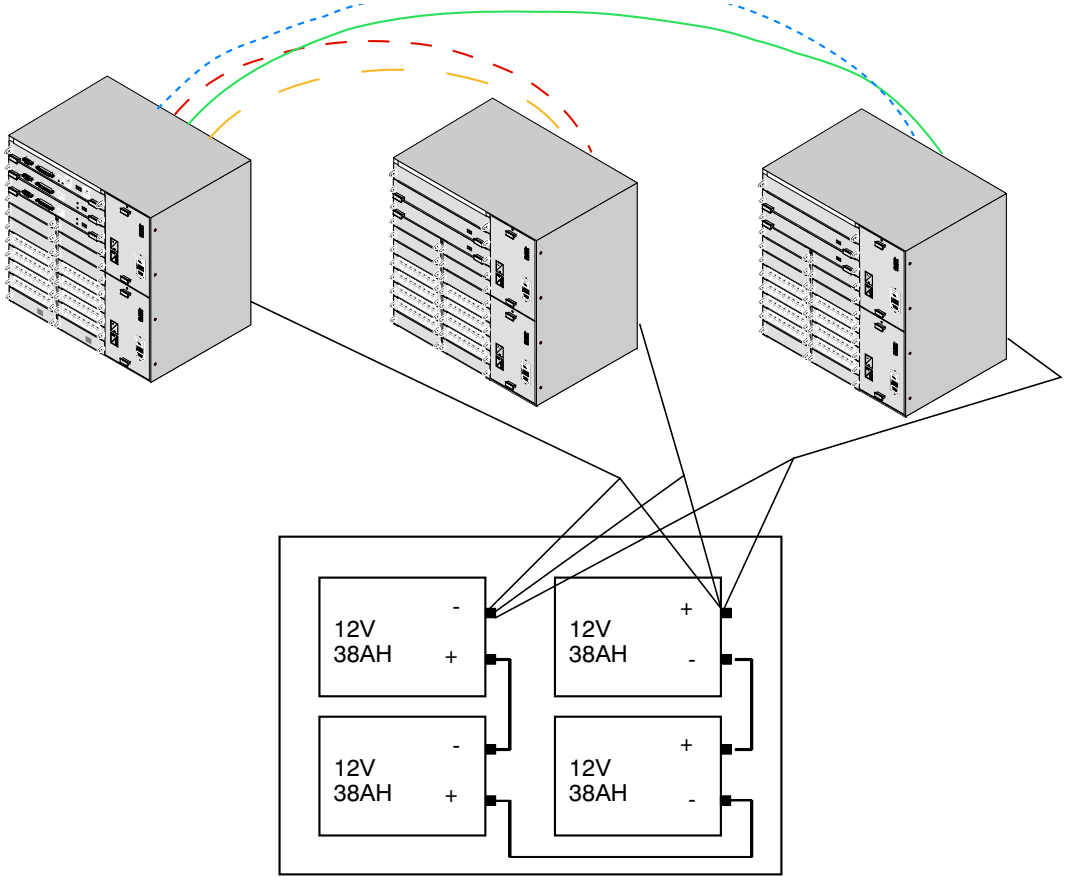


Figure 3.26 *CONNECTING A BATTERY PACK IN PARALLEL TO AN A3XD IPBX*

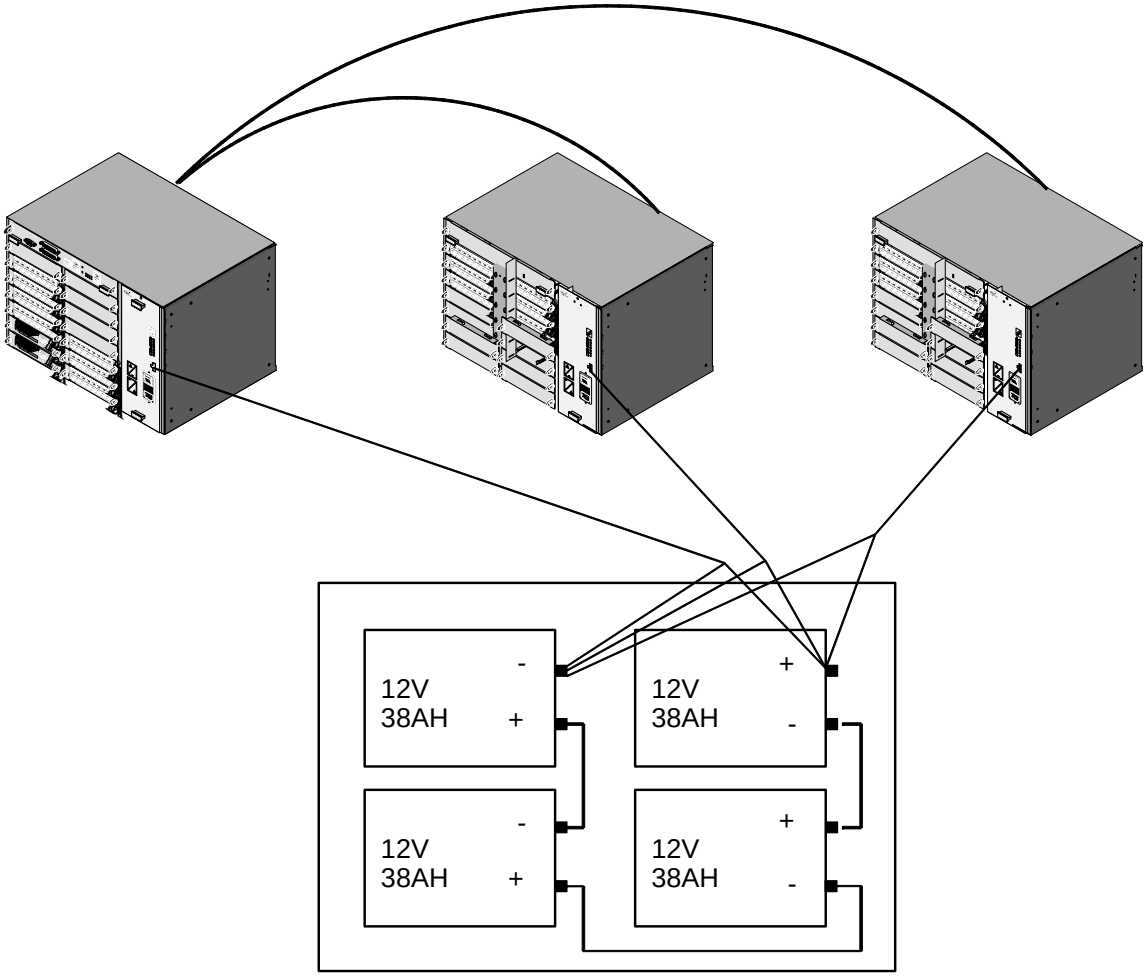


Figure 3.27 *CONNECTING A BATTERY PACK IN PARALLEL TO AN A3XL IPBX*

- Battery in parallel on an A2XD or AXL iPBX (2 cabinets)
  If you do not wish to use 2 batteries (one per cabinet), but only one for the 2 cabinets together, use a battery complying with the specifications in the following table:

BATTERY SPECIFICATIONS	CAPACITY
Number of battery elements	4
Voltage	4 x 12 V (12 V per battery element)
Capacity (amp/hours)	24 Ah
Battery autonomy	3 h 30 mn

TABLEAU 3.14 A2XD OR AXL IPBX BATTERY CHARACTERISTICS

Attention : *(1) Do not connect an AXD iPBX and another Aastra iPBX (for instance AXL or AXS) to the same battery pack.*
(2) Do not connect an AXL iPBX and an AXS iPBX to the same battery pack.

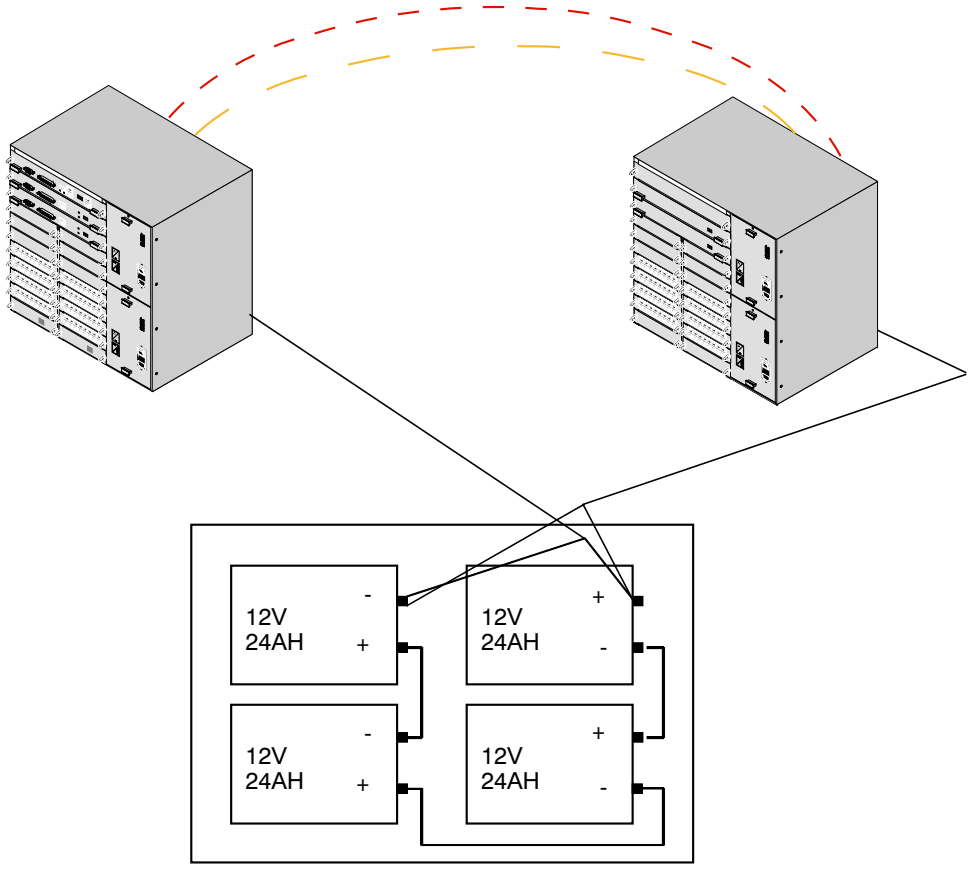


Figure 3.28 *CONNECTING A BATTERY PACK IN PARALLEL TO AN A2XD IPBX*

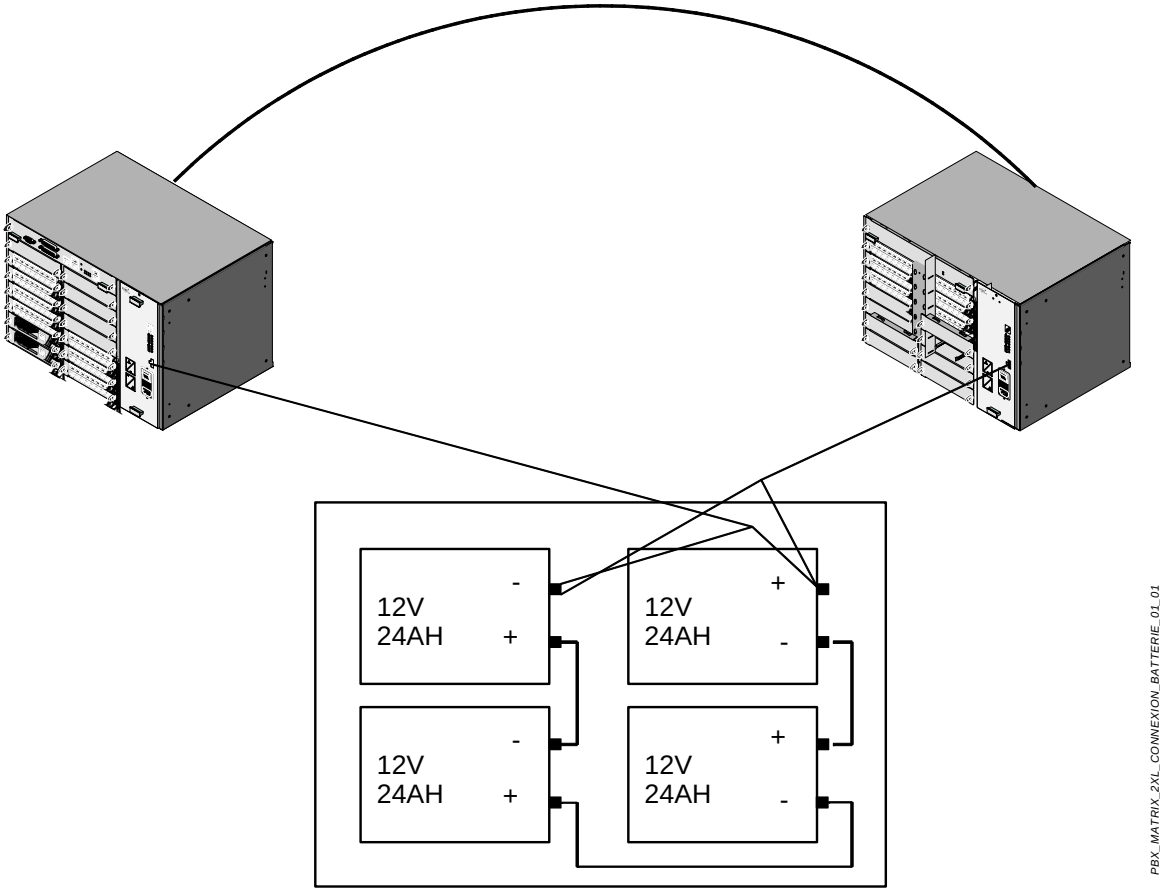


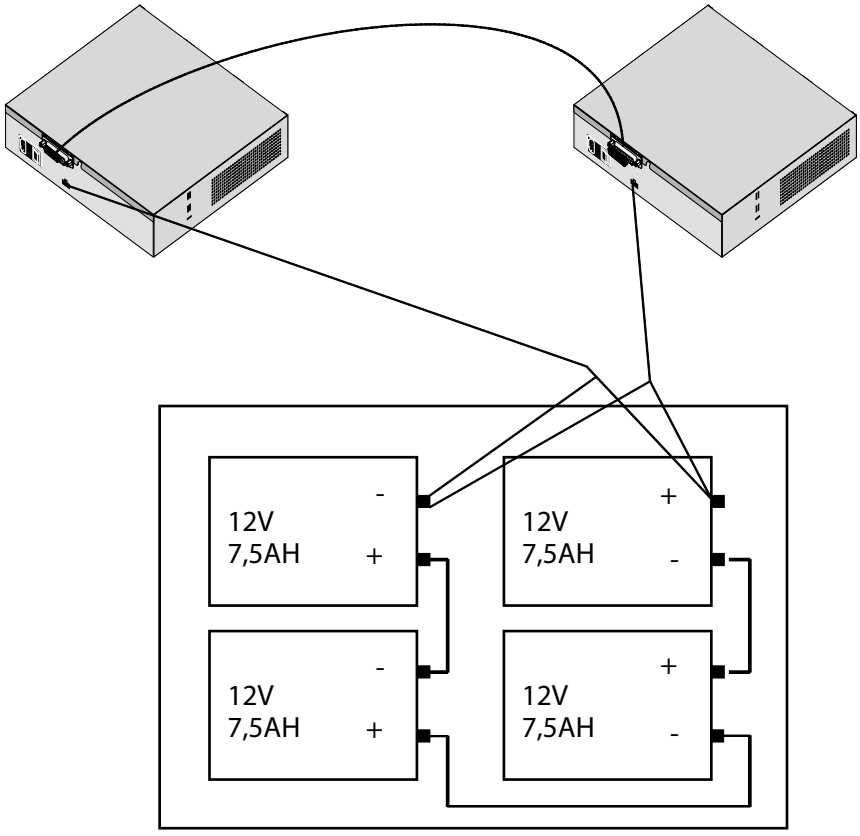
Figure 3.29 *CONNECTING A BATTERY PACK IN PARALLEL TO AN A2XL IPBX*

- Battery pack in parallel on an A2XS iPBX (2 cabinets)
  If you do not wish to use 2 batteries (one per cabinet), but only one for the 2 cabinets together, use a battery complying with the specifications in the following table:

BATTERY SPECIFICATIONS	CAPACITY
Number of battery elements (battery type YUASA NP4-12)	4
Voltage	4 x 12 V (12 V per battery element)
Capacity (amp/hours)	7.5 Ah
Battery autonomy	1 h

TABLEAU 3.15 BATTERY SPECIFICATIONS FOR AN A2XS IPBX

Attention : *Do not connect an AXL iPBX and an AXS iPBX to the same battery pack.*



PBX_MATRIX_2XS_CONNEXION_BATTERIE_01_01

Figure 3.30 *CONNECTING A BATTERY PACK IN PARALLEL TO AN A2XS IPBX*

3.8.7.1.2 INSTALLATION

The various specifications (connections, wiring, etc.) relating to the installation of the external battery are described in the sections dealing with the power supply module (see section 4.2). If a single battery pack is used for an entire A3XD, A3XL or A2XS iPBX, see Figure 3.26 , Figure 3.27 and Figure 3.30 .

3.8.7.2 Ventilation

Aastra XD

Ventilation is provided by the 4 fans on the power supply units, which draw air from the cabinet on the rear of the power supply module. Fresh air enters through the fresh air inlets on the left side.

Nota : *A single power supply unit is used in a simplex configuration. A ventilation unit consisting of two fans is then added instead of the second power supply unit. No matter the configuration, ventilation must be provided by four fans.*

The fans are monitored by the two power modules, for a duplex configuration, and by the power module and the ventilation module, for a simplex configuration (see Section 3.8.7).

Aastra XS/XL

Cooling is ensured by the 2 fans in the power supply unit (1 fan only for AXS, AXS12 and AXS6) which extract air from the cabinet on the back plane of the power supply module (left-hand side for AXS, AXS12 and AXS6). Fresh air enters through openings on the left-hand side (right-hand side for AXS, AXS12 and AXS6).

The fan(s) is/are monitored by the power supply module (see section 3.8.7).

3.9 Different configuration options

The iPBX is preconfigured by default at the factory. Through programming, it is possible to define other specific configurations: standard configuration, multi-company configuration, multi-site configuration, hotel/motel and hospital functions.

It is necessary to determine which configuration is to be used before initialisation. Once initialised, the programming tool proposes the menus specific to the configuration chosen (see Section1.3, List of documents).

3.9.1 Configuration ex factory

The iPBX has a default configuration when it leaves the factory (default configuration also obtained after a total reset). The system is fully functional and only requires a few adjustments after initialisation to be completely operational.

3.9.2 Standard configuration

The standard configuration is a customised configuration. It caters for the special requirements of a company. The standard configuration is suitable for single-company installations, whether in small premises or for larger-scale organisations with a large number of extensions. Customisation can include changing the numbering plan, setting up an automatic call distribution service, defining categories, and much more to optimise the use of the iPBX by the customer.

3.9.3 Multi-company configuration

This is the term used to describe a configuration that enables many organisations to use one iPBX. An iPBX can manage up to 32 different organisations. Each company/ department pair can be fully customised to suit its own unique requirements, including for example, its own central office trunks, operator consoles, speed dial numbers, and greeting messages.

3.9.4 Multi-site configuration

A multi-site network is made up of a number of interconnected sites, thus offering services similar to those of a high capacity system. Multisite operation ensures that users are unaware of the geographical location of the various sites composing a company.

3.9.5 Hotel/motel configuration

The iPBX offers additional features suitable for hotels/motels. Monitoring can be carried out on an operator console or a digital set for the following services:

- Room status - occupied or free
- Check-in and check-out
- Wake-up function
- Billing credit allowance and record printouts
- Message lamp control for message notification
- …

3.9.6 Hospital configuration

This configuration, similar to hotel operation, can also include functions specific to hospitals such as:

- A voice prompt
- Management of DID (Direct Inward Dialling) specifically suited to patients
- The do not disturb function for patients during the night
- Charging according to patient downpayments.

3.10 The user interface

The user interface is a PC, running with Windows (2000, XP, ..) or Linux, fitted with web browser (such as Internet Explorer, Filezilla) for accessing Aastra Management Portal (AMP), see Section 6.2.6.

This console can be connected:

- Locally to the "LAN" port located on the front panel of the CPU card
- Remotely to the same LAN as the iPBX
- Remotely via an analogue or ISDN modem
- Remotely via an ISDN router

Note : *See the corresponding sections for these different access types.*

The iPBX user interface is used for:

- Telephony management:
  - users
  - external lines
  - numbering plan
  - attendants and call distribution services for incoming call distribution
- Data management:
  - managing data services
  - creating links
- System management:
  - date and time
  - cards
  - management terminals
  - passwords
  - software configurations
- operation monitoring and supervision:
  - users
  - external lines
  - iPBX subassemblies
- Access to system data:
  - signalling activation
  - definition of tones
  - configuration transfer.

See Aastra Management Portal operating manual (Document [1])

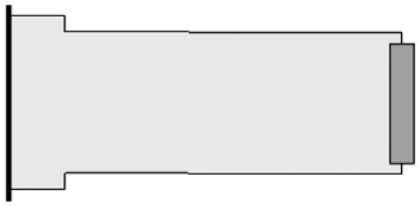
4 Description des sous-ensembles

4.1 Expansion cards

4.1.1 DescriptionDescription des sous-ensembles

Aastra XS/XL/XD expansion cards exist in RJ45 physical format, a format fitted with a front panel for RJ45 connectors. These cards are called "RJ cards".

The dimensions of the cards (Lx16-X) are 280 mm in depth and 100 mm in width.



Card format

The physical interface of the card with the rest of the system is provided through a 96-pin HE12 connector connected to the backplane. The backplane connectors include advanced power supply contacts used to integrate the live Extraction/Insertion function of the equipment cards (Lx16-X).

Extraction keys are used to lock and extract cards and blanking plates.

A card is locked as follows (see Figure 4.1):

- Set the two 1/4-turn locks in the horizontal position.
- Push the card to the bottom of its slot inside the cabinet.
- Turn the locks by 1/4 turn inwards the inside to lock the card in its slot.

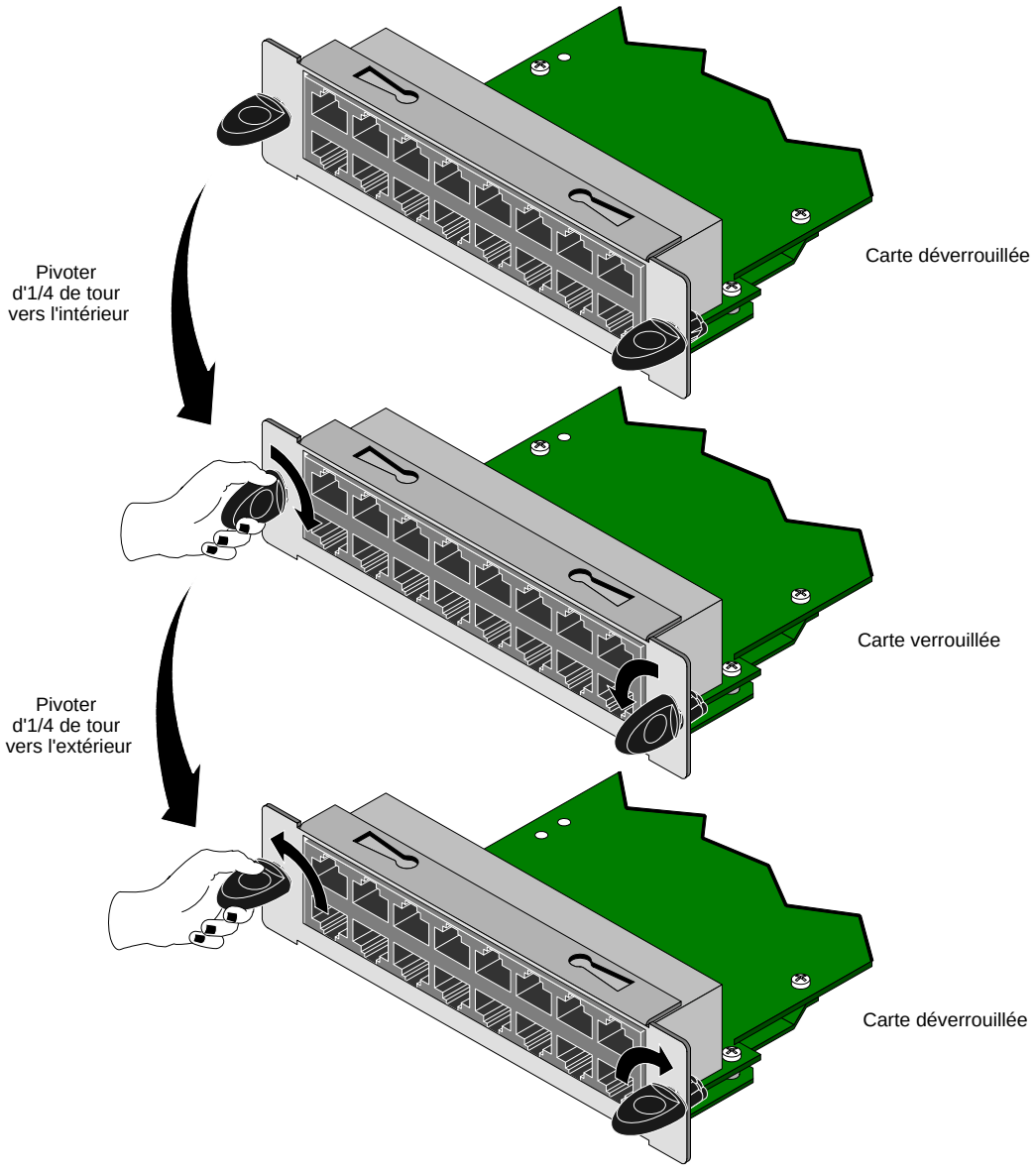


Figure 4.1 *PROCEDURE FOR LOCKING A CARD OR BLANKING PLATE*

- A card is extracted as follows (see Figure 4.1):
- Turn the two 1/4 turn locks outward to unlock the card.
- Pull the two locks to extract the card.

4.1.2 Loading CLX cards

- The flash memory on CLX cards contain the start-up software; an image of the application software can be inserted, installed, etc. on it.
- They can be fully loaded during an update using a BOF3 card (see section1.3, Document [3]).

4.2 *Power supply module*

4.2.1 ADS 350XD (AXD iPBX)

4.2.1.1 Description

ADS 350AXD is the power supply module of the main cabinet and expansion cabinet of an AXD iPBX. It replaces the ADS300XD module, and offers extra 50 W and an enhanced cooling system (a plate has been added to the left side).

Depending on the Aastra XD configuration, power is supplied to the cabinets through one or two ADS350XDpower supply modules:

- For a simplex configuration, only one power supply module is used by the cabinet. A ventilation system is then added instead of the second power supply module.
- For a simplex configuration with secure power supply, and for a duplex configuration, two power supply modules are used per cabinet. The power supply modules then work in load-sharing mode. If one power supply module becomes faulty, the other one carries the entire load.

The mains power supply voltage is 115/230 V - 50/60 Hz - 350 W.

An optional, external 48V backup battery can be installed.

4.2.1.2 Functional description

Each power supply module has the following functional units (see Section 3.8.6):

- A 48V converter supplying the following voltages:
  - +5 V/15 A,
  - -5 V/0.5 A,
  - +12 V/0.5 A. This current does not include the power supply to the four fans.
  - -12 V/0.65 A,
  - -48 V / 2.9 A (DECT phone sets and base stations)
  - ringer 70 V / 0.02A

a 48V rectifier supplying a 7 A current, used as follows:

- 2.1 A for the converter
- 2.9 for the DECT telephone sets and base stations
- 2A for charging a 16 Ah battery which offers the system 4 hours of autonomy.

  The rectifiers of several power supplies can be connected in parallel to a battery. The rectifier can be connected to a 115 V or 230 V (+/- 10%) mains, 50 Hz or 60 Hz, without configuration,

- two fans supplied by the converter 12V DC voltage draw air towards the rear of the cabinet.

4.2.1.3 Monitoring

Two 5 A fuses located upstream from the rectifier are used to isolate the power supply module in case of overvoltage.

An F300 (6.3 A) fuse inside the power supply module (see Figure 4.3) protects the power supply in case of polarity inversion when connecting the battery.

The converter monitors the voltage on the battery terminals, and stops when this voltage drops below a threshold set at 43V. This device prevents deep discharging of the battery in the absence of mains or failure/shutdown of the rectifier.

When the 2 fans are detected as stopped simultaneously, the power supply is cut off automatically; restarting is possible only through an On/Off sequence.

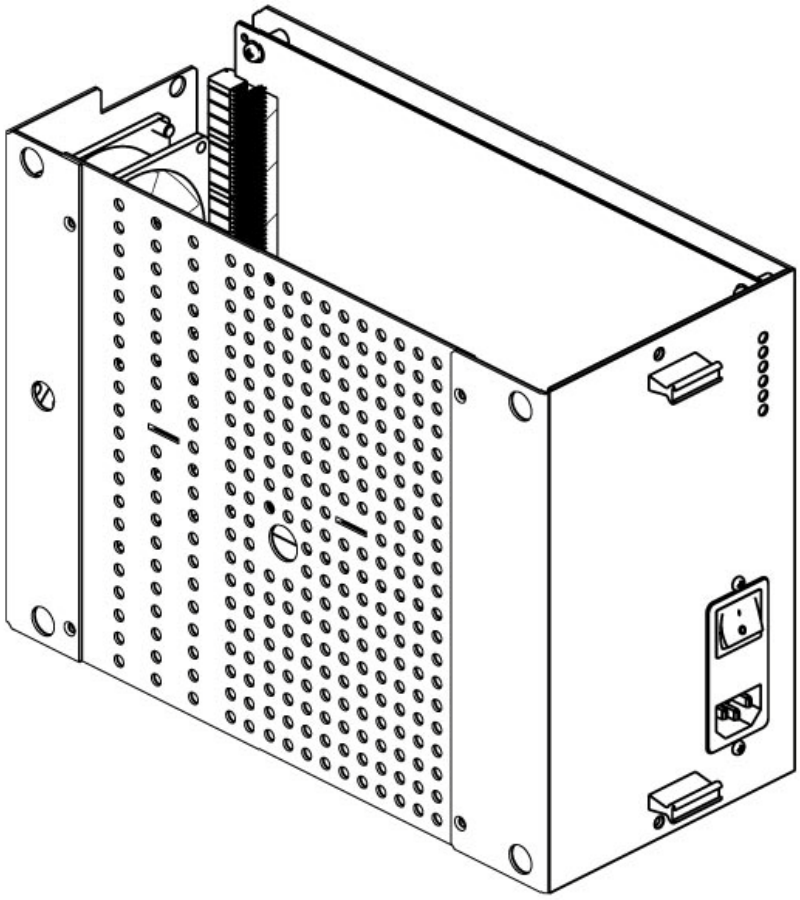


Figure 4.2 *OVERVIEW OF THE ADS350 XD MODULE*

4.2.1.4 Physical description

The ADS 350XD power supply module is a 218 mm high, 135 mm wide and 292 mm deep plug-in rack, extraction handles excluded. The maximum height of the components above the PCB is 70 mm.

An "I/O" switch on the front panel is used to power the supply on and off.

The fuse holder is located between the "I/O" switch and the mains outlet.

The ADS 350XD is fitted with two 80 mm diameter fans located at the back of the power supply module.

Connectors

The front panel of the power supply module has a mains socket.

Indicators

The ADS 350XD power supply modules have 6 indicators on the front panel, which give the following information:

SYMBOL	INDICATOR STATE	EXPLANATION
	On	Line Power Present
	On	Battery connected
	On	Rectifier On
	On	Converter On
	On	Bell current generator On
	On	Fans present

TABLEAU 4.1 PRESENTATION OF ADS 350XD POWER SUPPLY MODULE INDICATORS

4.2.1.5 Hardware configuration

The mains voltage, 115 V or 230V (+/- 10%), is detected automatically, internally.

4.2.1.6 Installation and wiring

The ADS 350XD power supply module is supplied with a battery connection cable fitted with a 4 pin connector, with a centring piece to prevent polarity inversion when connecting the backup battery.

4.2.2 ADS 300XD (AXD iPBX)

Note : *From R5.1, the new module ADS350XD (AHJ0033) replaces the old ADS300XD (refer to the corresponding paragraph).*

4.2.2.1 Description

ADS 300AXD is the power supply module of the main cabinet and expansion cabinet of an AXD iPBX.

Depending on the Aastra XD configuration, power is supplied to the cabinets through one or two ADS300XDpower supply modules:

- For a simplex configuration, only one power supply module is used by the cabinet. A ventilation system is then added instead of the second power supply module.
- For a simplex configuration with secure power supply, and for a duplex configuration, two power supply modules are used per cabinet. The power supply modules then work in load-sharing mode. If one power supply module becomes faulty, the other one carries the entire load.

The mains power supply voltage is 115/230 V - 50/60 Hz - 300 W.

An optional, external 48V backup battery can be installed (see Section3.8.7.1).

4.2.2.2 Functional description (Figure 3.21)

Each power supply module has the following functional units (see Section 3.8.6):

- A 48V converter supplying the following voltages:
  - +5 V/15 A,
  - -5 V/0.5 A,
  - +12 V/0.5 A. This current includes the power supply to the four fans.
  - -12 V/0.65 A,
  - -48 V / 1.9 A (DECT phone sets and base stations)
  - ringer 70 V / 0.02A

a 48V rectifier supplying a 6 A current, used as follows:

- 2.1 A for the converter
- 1.9 for the DECT telephone sets and base stations
- 2A for charging a 16 Ah battery which offers the system 4 hours of autonomy.

The rectifiers of several power supplies can be connected in parallel to a battery. The rectifier can be connected to a 115 V or 230 V (+/- 10%) mains, 50 Hz or 60 Hz, without configuration,

- two fans supplied by the converter 12V DC voltage draw air towards the rear of the cabinet.

4.2.2.3 Monitoring

Two 3.15 A fuses located upstream from the rectifier are used to isolate the power supply module in case of overvoltage.

An F300 (6.3 A) fuse inside the power supply module (see Figure 4.3) protects the power supply in case of polarity inversion when connecting the battery.

The converter monitors the voltage on the battery terminals, and stops when this voltage drops below a threshold set at 43V. This device prevents deep discharging of the battery in the absence of mains or failure/shutdown of the rectifier.

When the 2 fans are detected as stopped simultaneously, the power supply is cut off automatically; restarting is possible only through an On/Off sequence.

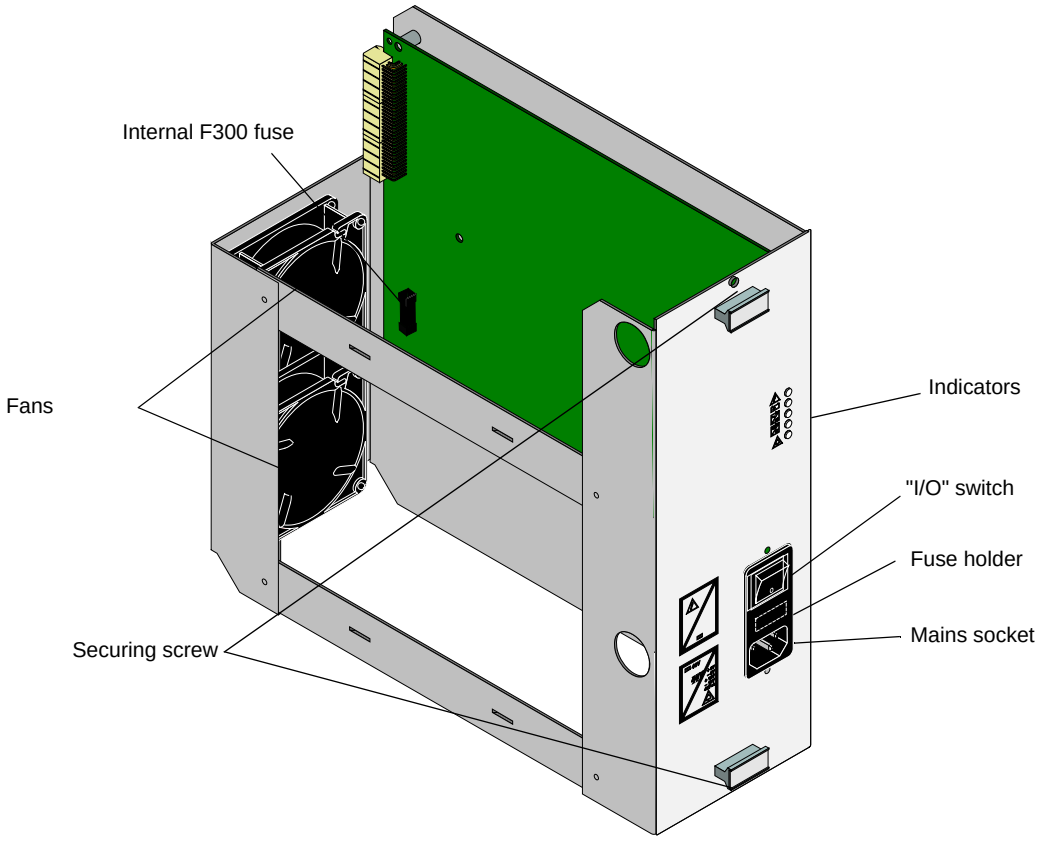


Figure 4.3 *OVERVIEW OF THE ADS300 XD MODULE*

4.2.2.4 Physical description (Figure 4.3)

The ADS 300XD power supply module is a 218 mm high, 135 mm wide and 292 mm deep plug-in rack, extraction handles excluded. The maximum height of the components above the PCB is 70 mm.

An "I/O" switch on the front panel is used to power the supply on and off.

The fuse holder is located between the "I/O" switch and the mains outlet.

The ADS 300XD is fitted with two 80 mm diameter fans located at the back of the power supply module.

Connectors

The front panel of the power supply module has a mains socket.

Indicators

The ADS 300XD power supply modules have 6 indicators on the front panel, which give the following information:

SYMBOL	INDICATOR STATE	EXPLANATION
	On	Line Power Present
	On	Battery connected
	On	Rectifier On
	On	Converter On
	On	Bell current generator On
	On	Fans present

TABLEAU 4.2 PRESENTATION OF ADS 300XD POWER SUPPLY MODULE INDICATORS

4.2.2.5 Hardware configuration

The mains voltage, 115 V or 230V +/- 10%), is detected automatically, internally.

4.2.2.6 Installation and wiring

The ADS 300XD power supply module is supplied with a battery connection cable fitted with a 4 pin connector, with a centring piece to prevent polarity inversion when connecting the backup battery.

4.2.3 ADS 350X (AXL iPBX)

4.2.3.1 Description

Note : *ADS 350X is the power supply module of the main cabinet and expansion cabinet of an AXL iPBX. It replaces the ADS300 X module, and offers extra 50 W and an enhanced cooling system (a plate has been added to the left side).*

An optional, external 48V backup battery can be installed.

4.2.3.2 Functional description

The two power supplies include the following functional blocks:

- A 48V converter supplying the following voltages:
  - +5 V/15 A,
  - -5 V/0.5 A,
  - +12 V/0.5A. This value does not include the fan power supply current,
  - -12 V/0.65 A,
  - -48 V / 2.9 A (DECT phone sets and base stations)
  - 40 V (ISDN) / 0.7 A
  - ringer 70 V / 0.2A
- a 48V rectifier supplying a 7 A current, used as follows:
  - 2.1 A for the converter
  - 2.9 for the DECT telephone sets and base stations
  - 2A to charge a 16 Ah battery for 10 hours providing the system with 4 hours autonomy.

    The rectifiers of several power supplies can be connected in parallel. The rectifier can be connected to a 115 V or 230 V (+/- 10%) mains, 50 Hz or 60 Hz, without configuration,
- two fans supplied by the converter 12V DC voltage draw air towards the rear of the cabinet.

4.2.3.3 Monitoring

Two 5 A fuses located upstream from the rectifier are used to isolate the power supply module in case of overvoltage.

An F300 (6.3 A) fuse inside the power supply module (see Figure 4.5) protects the power supply in case of polarity inversion when connecting the battery.

The converter monitors the voltage on the battery terminals, and stops when this voltage drops below a threshold set at 43V. This device prevents deep discharging of the battery in the absence of mains or failure/shutdown of the rectifier.

When the 2 fans are detected as stopped simultaneously, the power supply is cut off automatically; restarting is possible only through an On/Off sequence.

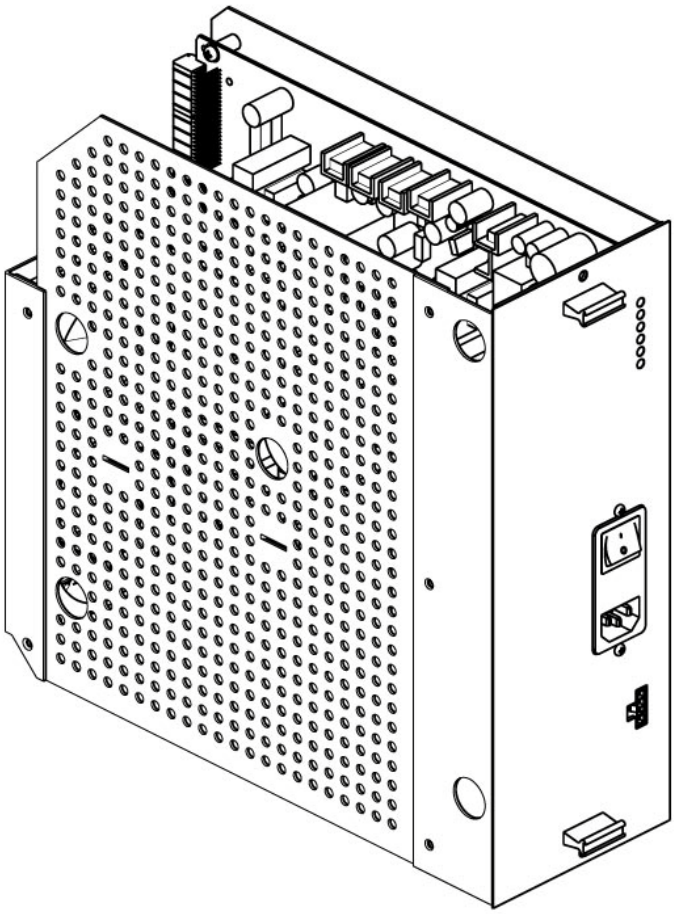


Figure 4.4 *OVERVIEW OF THE ADS 350X MODULE*

4.2.3.4 Physical description (Figure 4.5)

The ADS 350X power supply module is a 7U high, 112mm wide and 316mm deep plug-in rack, extraction handles excluded. The maximum height of the components above the PCB is 90 mm.

An "I/O" switch on the front panel is used to power the supply on and off.

The fuse holder is located between the "I/O" switch and the mains outlet.

The ADS 350X is fitted with 2 80mm diameter fans located at the back of the power supply module.

Connectors

The front panel of the power supply module has:

- A mains socket
- A 4-pin battery connector

Indicators

The ADS 350X power supplies include 6 indicators on the front panel giving the following indications:

SYMBOL	INDICATOR STATE	EXPLANATION
	On	Line Power Present
	On	Battery connected
	On	Rectifier On
	On	Converter On
	On	Bell current generator On
	On	Fans present
	On	40 V ISDN present

TABLEAU 4.3 PRESENTATION OF ADS 350X POWER SUPPLY MODULE INDICATORS

4.2.3.5 Hardware configuration

The mains voltage, 115 V or 230V (+/- 10%), is detected automatically, internally.

4.2.3.6 Installation and wiring

The ADS 350X power supply module is supplied with a battery connection cable fitted with a 4 pin connector, with a centring piece to prevent polarity inversion when connecting the backup battery.

4.2.4 ADS 300X (AXL iPBX)

4.2.4.1 Description

Note : *From R5.1, the new module ADS350XD (AHJ0033) replaces the old ADS300XD (refer to the corresponding paragraph).*

ADS 300X is the power supply module of the main cabinet and expansion cabinet of an AXL iPBX. The mains power supply voltage is 115/230 V - 50/60 Hz - 300 W.

An optional, external 48V backup battery can be installed (see Section3.8.7.1).

4.2.4.2 Functional description (Figure 3.23)

The two power supplies include the following functional blocks (see Section 3.8.6):

- A 48V converter supplying the following voltages:
  - +5 V/13 A,
  - -5 V/0.5 A,
  - +12 V/0.5A. This value does not include the fan power supply current,
  - -12 V/0.25 A,
  - -48 V / 1.9 A (DECT phone sets and base stations)
  - 40 V (ISDN) / 0.7 A
  - ringer 70 V / 0.02A
- a 48V rectifier supplying a 6 A current, used as follows:
  - 2.1 A for the converter
  - 1.9 for the DECT telephone sets and base stations
  - 2A to charge a 16 Ah battery for 10 hours providing the system with 4 hours autonomy.

    The rectifiers of several power supplies can be connected in parallel. The rectifier can be connected to a 115 V or 230 V (+/- 10%) mains, 50 Hz or 60 Hz, without configuration,
- two fans supplied by the converter 12V DC voltage draw air towards the rear of the cabinet.

4.2.4.3 Monitoring

Two 3.15 A fuses located upstream from the rectifier are used to isolate the power supply module in case of overvoltage.

An F300 (6.3 A) fuse inside the power supply module (see Figure 4.5) protects the power supply in case of polarity inversion when connecting the battery.

The converter monitors the voltage on the battery terminals, and stops when this voltage drops below a threshold set at 43V. This device prevents deep discharging of the battery in the absence of mains or failure/shutdown of the rectifier.

When the 2 fans are detected as stopped simultaneously, the power supply is cut off automatically; restarting is possible only through an On/Off sequence.

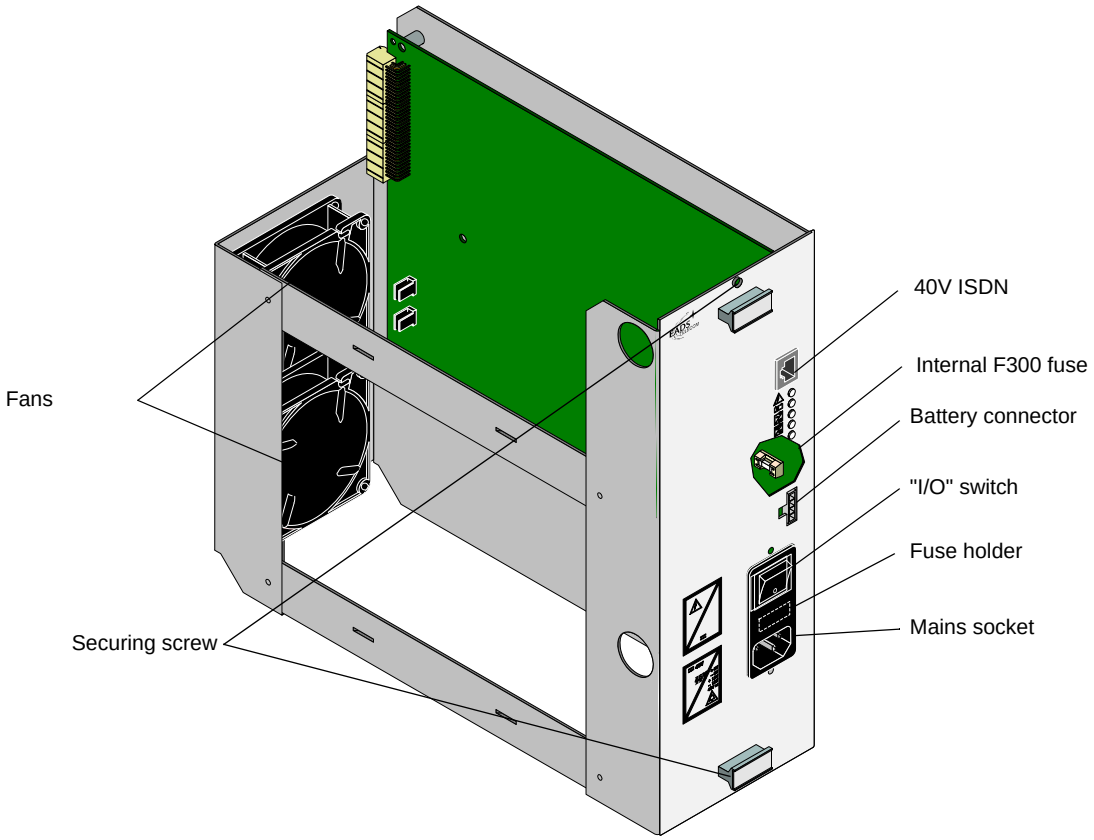


Figure 4.5 *OVERVIEW OF THE ADS 300X MODULE*

4.2.4.4 Physical description (Figure 4.5)

The ADS 300X power supply module is a 7U high, 112mm wide and 316mm deep plug-in rack, extraction handles excluded. The maximum height of the components above the PCB is 90 mm.

An "I/O" switch on the front panel is used to power the supply on and off.

The fuse holder is located between the "I/O" switch and the mains outlet.

The ADS 300X is fitted with 2 80mm diameter fans located at the back of the power supply module.

Connectors

The front panel of the power supply module has:

- A mains socket
- A 4-pin battery connector
- An RJ45 40 V ISDN connector.

Indicators

The ADS 300X power supplies include 6 indicators on the front panel giving the following indications:

SYMBOL	INDICATOR STATE	EXPLANATION
	On	Line Power Present
	On	Battery connected
	On	Rectifier On
	On	Converter On
	On	Bell current generator On
	On	Fans present
	On	40 V ISDN present

TABLEAU 4.4 PRESENTATION OF ADS 300X POWER SUPPLY MODULE INDICATORS

4.2.4.5 Hardware configuration

The mains voltage, 115 V or 230V +/- 10%), is detected automatically, internally.

4.2.4.6 Installation and wiring

The ADS 300X power supply module is supplied with a battery connection cable fitted with a 4 pin connector, with a centring piece to prevent polarity inversion when connecting the backup battery.

4.2.5 ADS 150X (AXS and AXS12 iPBXs)

4.2.5.1 Description

ADS 150X is the power supply module of the main cabinet and expansion cabinet of AXS and AXS12 iPBXs. The mains power supply voltage is 115 V or 230 V, 50 Hz or 60 Hz - 150 W.

An external 48 V backup battery can be installed optionally (see section 3.8.7.1).

4.2.5.2 Functional description

ADS 150X includes the following functional blocks (see Section 3.8.6):

- A 48V converter supplying the following voltages:
  - +5 V / 7 A
  - -5 V / 0.1 A
  - +12 V/0.15A. This value does not include the fan power supply current.
  - -12 V / 0.55 A
  - -48 V / 0.45 A
  - 70 V / 0.06 A ringer
- A 48V rectifier supplying a 2.5A current, used as follows:
  - 1.6 A for the converter
  - 0.45 for the DECT telephone sets and base stations
  - 0.95 A for charging a 7.5 Ah battery which offers the system 4 hours of autonomy.

    The rectifier can be connected to a 115 V or 230 V mains unit, 50 Hz or 60 Hz.
- A fan supplied with 12 V DC by the converter draws air through the right-hand side (front cabinet).

4.2.5.3 Monitoring

Two 2 A fuses located upstream from the rectifier are used to isolate the power supply module in case of overvoltage.

The converter monitors the voltage on the battery terminals, and stops when this voltage drops below a threshold set at 43V. This device prevents deep discharging of the battery in the absence of mains or failure/shutdown of the rectifier.

When the fan is detected as stopped, the power supply is cut off automatically; restarting is possible only through an On/Off sequence.

4.2.5.4 Physical description

ADS 150X (see Figure 3.14) is a card 90 mm wide and 410 mm long. The height of the

components above the PCB is limited to 77 mm.

The ADS 150X card is secured on cross-pieces screwed on the back of the cabinet.

An "I/O" switch on the front panel of the AXS cabinet is used to power the supply on and off.

The fuse holder is located between the "I/O" switch and the mains socket at the back of the cabinet.

ADS 150X is fitted with an 80 mm diameter fan, located on the left of the power supply module.

Connectors

The back plane of AXS and XS12 cabinets comprises:

- A mains socket
- a 4-pin battery connector.

Indicators

An "ALIM" indicator located on the front panel of the UCV card indicates when on:

- mains presence, and,
- rectifier operation.

Note: *This LED also indicates a mains failure (flashes slowly) and abnormal operation (flashes rapidly or LED out) of the power supply (both power supplies if there is an expansion cabinet).*

4.2.5.5 Hardware configuration

There is no hardware configuration. ADS 150X accepts 115 V and 230 V.

4.2.5.6 Installation and wiring

The ADS 150X power supply module comes with a connection cable fitted with a 4 pin connector, with a centring piece to prevent polarity inversion when connecting the backup battery.

4.3 UCV-D card

4.3.1 Functional description

The UCV-D card provides the following functions described in Section 3.8.1:

- Data and voice switching
- Duplex logic and start
- Signal processing
- Voice mail server
- Defence (management of interface card statuses)
- Synchronisation
- Management of interface card commands.

It also offers the following functions:

- Interfacing with:
  - an operating console via Ethernet access
  - the RUCV card of an expansion cabinet
- Supervision of expansion cabinets:

  The power on state of an expansion cabinet is detected by recognising a synchronisation pattern. The UCV-D card can command a general "Reset" of the expansion cabinets, provided they are synchronised.
- Power supply: the UCT-D card receives the following on the back plane connector (J1):
  - a +5 V power supply voltage used for the operation of its internal circuits,
  - +12 V power supply used in operating the microcontroller.

    The card has a CR2450 type battery for:
    - retaining the status of the Duplex logic
    - backing up power supply for the time stamp.

    The battery is installed on the circuit card and is interchangeable. The service life of this battery is minimum 5 years, and 10 years in a system that is permanently powered up.
- UCV-D has a Flash Disk on the IDE bus, comprising a Compact Flash card fitted on a CF Socket type II. The CF card is not accessible on the front panel.
- The VMAIL function is directly on the CPU card. A quota of compact flash disk space is assigned to this function to store messages and prompts.

Daughter cards

- The UCV-D card can be fitted with two EIP daughter cards for managing VoIP communications. These two daughter cards have 8/32 channels each for signal processing.

Note: *The UCV-D card is compatible with the ROHS Directive.*

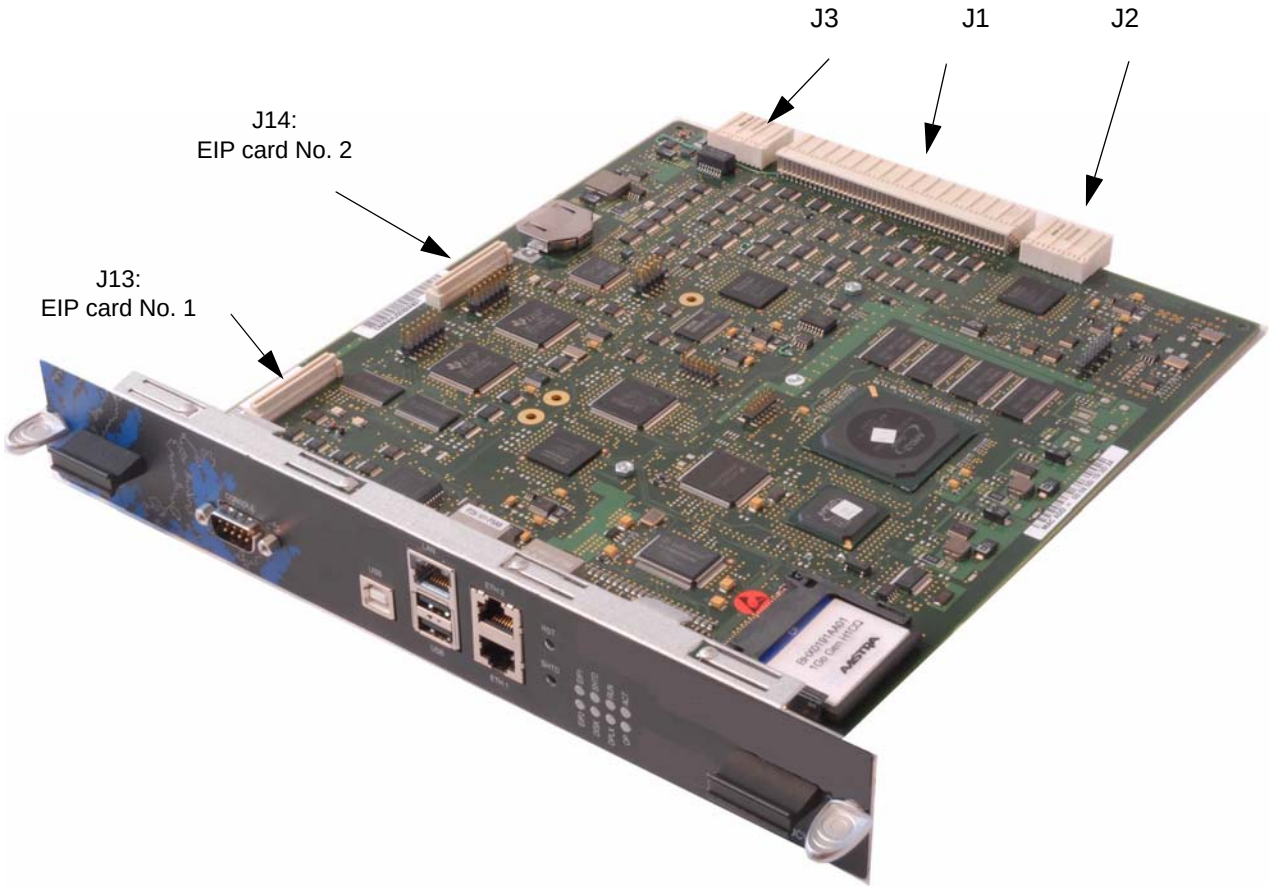
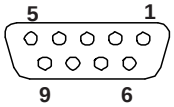
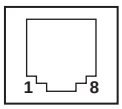

J3
J1
J2
J14:
EIP card No. 2
J13:
EIP card No. 1

Figure 4.6 *OVERVIEW OF THE UCV-D CARD*

4.3.2 Physical description

NAME	FUNCTIONS/CHARACTERISTICS	CONTACTS
J1 (rear panel)	Female connector, 192 pins: • Backplane connection • Includes the synchronous junctions (equipment bus) used in the main cabinet, the reference clocks and system bus.	
J2 (rear panel)	Female connector, 48 pins: • Backplane connection • Link with the connector of the RUCV card in an expansion cabinet.	
J3	Female connector, 48 pins: • Backplane connection • Used for specific duplex UCV signals.	
J13 and J14	CMS 80-pin connectors: receive two optional daughter cards - EIP No. 1 on J13 and EIP No.2 on J14 – to increase the capacity of the VoIP function.	
J10A and J10B	HE14 connector	
CONSOLE (1)  	Local access to operation in specific mode	• Pin 1: DCD • Pin 2: RXC • Pin 3: TXC • Pin 4: DTR • Pin 5: GND • Pin 6: DSR • Pin 7: RTS • Pin 8: CTS • Pin 9: RI
USB (B) (1)	USB connector in DEVICE mode	• Pin 1: NC • Pin 2: DNEG2 • Pin 3: DPOS2 • Pin 4: User ID • Pin 5: GND
LAN (1)  	RJ45 8-pin connector: host the Ethernet 10/100BASE-TX LAN access. **Note:** *Applications that use the VTI/XML protocol (i2052 in CTI, TWP mode) can be connected directly to the LAN port.*	• Pin 1: TXP • Pin 2: TXM • Pin 3: RXP • Pin 4: TLBR • Pin 5: TLBR • Pin 6: RXM • Pin 7: RLBR • Pin 8: RLBR

(1) Connector front view.

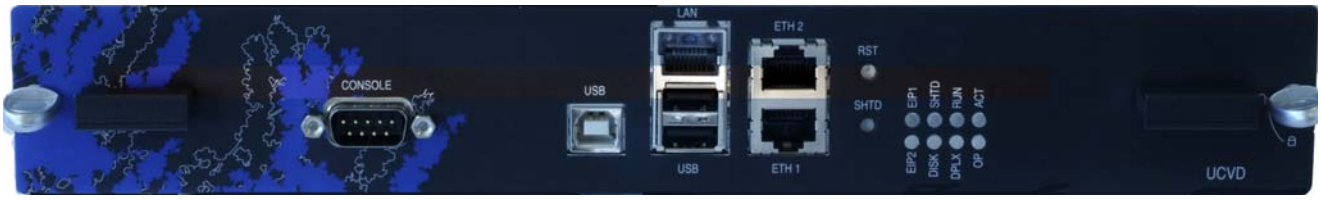
TABLEAU 4.5 DESCRIPTION OF UCV-D CARD CONNECTORS

NAME	FUNCTIONS/CHARACTERISTICS	CONTACTS
USB (A) (1)	USB connector in HOST mode	• Pin 1: PWR0 • Pin 2: DNEG0 • Pin 3: DPOS0 • Pin 4: GND
USB (A) (1)	USB connector in HOST mode	• Pin 1: PWR1 • Pin 2: DNEG1 • Pin 3: DPOS1 • Pin 4: GND
ETH1 (1)	RJ45 connector	• Pin 1: RXP • Pin 2: RXM • Pin 3: TXP • Pin 4: TLBR • Pin 5: TLBR • Pin 6: TXM • Pin 7: RLBR • Pin 8: RLBR
ETH2 (1)	RJ45 connector:Connection used for the access Administration in the case of configuration of separation of the networks Administration and Telephony. (refer to Manual AMT/PTD/PBX/0101).	• Pin 1: RXP • Pin 2: RXM • Pin 3: TXP • Pin 4: TLBR • Pin 5: TLBR • Pin 6: TXM • Pin 7: RLBR • Pin 8: RLBR

(1) Connector front view.

TABLEAU 4.5 DESCRIPTION OF UCV-D CARD CONNECTORS

4.3.2.1 Indicators



The UCV-D card has 8 indicators plus the ones integrated in the LAN connection. An indicator may contain several LEDs

:

INDICATOR	STATE	EXPLANATION
EIP No.1	ON green	Activity on Ethernet link: EIP daughter card No.1
EIP No. 2	ON green	Activity on Ethernet link: EIP daughter card No.2
SHTD (red) Linux shutdown	Red flashing ON green Off	PBX shutting down after the SHTD button has been pressed, or following a Reset OS or Reboot OS request by MMC (do not power off the device). Power off authorisation Normal operation.
DISK	ON green	Disk is being used
RUN (green)	On steady Off Flashing	ON upon card reset and during OS restart. OFF during application start. Flashing when the application is operational.
DPLX (green)	Green flashing ON green or OFF	Clock received from UCV-D No clock (UCV stopped or cable disconnected)
LAN 2 LEDs integrated in the RJ45 connector	- 1 yellow LED: Off On Flashing - 1 green/yellow LED: Off ON green ON yellow	 Half Duplex link. Full Duplex link. Collisions Link not set up. Link set up at 100 Mb/s. Link set up at 10 Mb/s.
ACT	ON green Off	Card active Card not active
OP	ON green ON red	Board operational Card out of service

TABLEAU 4.6 OVERVIEW OF THE UCV-D CARD INDICATORS

Note: *The "OP" and "ACT" indicators are useful in a duplex configuration. In a simplex configuration, these indicators are always on (green) when the card is operational.*

Pushbuttons

The front panel includes:

- An "**RST**" push button. It should only be used as a last resort when the SHTD push button is not working.
- A "**SHTD**" (shutdown) push button:

From the buttons on the CPU card front panel, you have to distinguish between two types of restart operations:

- Restart with OS reboot (shutting down and restarting the iPBX)
- Forced restart (not recommended in normal operation).

Restart with OS reboot (shutting down and restarting the iPBX)

Pressing and holding down the "**SHTD**" button (5 seconds), triggers an "OS reboot" (shutdown + iPBX restart).

Forced restart (not recommended in normal operation)

Press "**RST**". This button should only be used as last resort if pressing the "**SHTD**" button does not work.

4.3.3 Hardware and software configuration

During operation, the UCV-D card does not have any hardware configuration. All the configurations are performed by MMC from Aastra Management Portal:

- Master/Slave mode of the synchronisation port (by default set to Master).
- Priority/Non Priority mode of the synchronisation port (by default set to Non Priority).
- Setting of the input level for the external music on hold.
- Setting of the delay to apply to the DECT synchronisation signal.

Note: *The DECT synchronisation ports and input for an external music source are located on the front panel of the IUCV-D card.*

The built-in battery is still in circuit (no microswitch).

4.3.4 Installation and wiring

The UCV-D card can be hot-plugged/removed in an operational AXD iPBX.

Warning: *After a switchover the duration of which depends on the configuration (15 s. to 1 min.), the passive CPU card takes over and becomes active in the following three cases:*

- *If the active card is removed*
- *If the active card remains idle for 2 minutes*

- *If a hardware failure is detected on the active UCV-D card (in this case, a hardware fault detection is performed. The unavailability time on the cabinet can, therefore, be up to 3 minutes).*

The equipment connected to the UCV-D card has the installation details described in Section 5.6:

4.4 IUCV-D card

4.4.1 Functional description

The iUCV-D card supports the system's external connections:

- One removable i-button circuit for storing the iPBX ID number used in locking and unlocking the optional software functions
- One console port (reserved for the manufacturer).

  Note: *Do not use the IUCV-D console port.*
- One input for a source of external music
- Two primary and secondary DECT synchronisation ports
- Four alarm inputs and four relays (3 remote control relays + one "watchdog" alarm relay).

For a duplex configuration, the main cabinet of an AXD is fitted with two UCV-D cards. The two UCV-D cards (active and passive) communicate through the iUCV-D card.

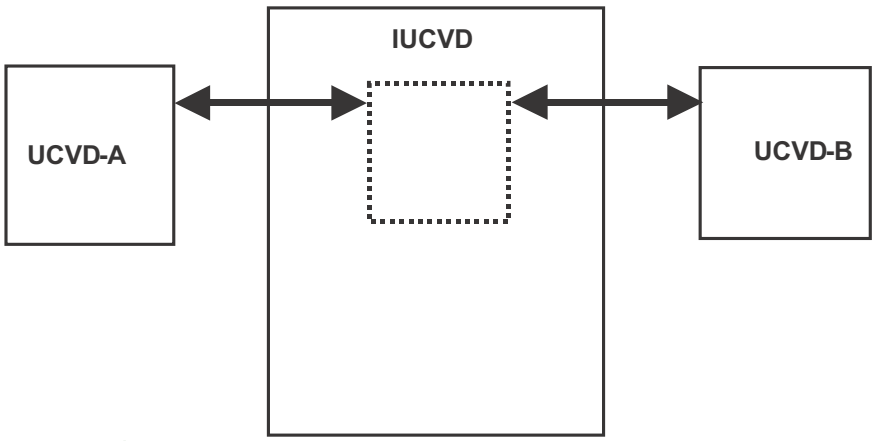


Figure 4.7 *IUCV-D INTERFACE BETWEEN TWO UCV-D CARDS*

Power supply: the iUCV-D card receives the following on the back plane connector (J1):

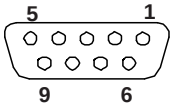
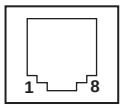
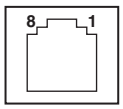
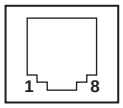
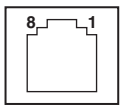
- a +5 V power supply voltage used for the operation of its internal circuits,
- a +12V power supply voltage used, among others, to supply power to an external device.

J1
i-Button.

Figure 4.8 *OVERVIEW OF THE IUCV-D CARD*

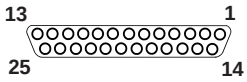
4.4.2 Physical description

4.4.2.1 Connectors

NAME	FUNCTIONS/CHARACTERISTICS	CONTACTS
J1 (rear panel)	Female connector, 192 pins: link with the UCV-D card	
CONSOLE (1)  	DB9-M connector: reserved for the manufacturer.	
DECT P (1)  DECT S (1)  	RJ45 double connector: primary and secondary DECT synchronisation ports, for radio base stations	**DECT P:** • Pin 1: AHGA • Pin 2: AHGB • Pin 3: PHBIT1 • Pin 4: PHDECT1 • Pin 5: NHDECT1 • Pin 6: NHBIT1 • Pin 7: HEXTA • Pin 8: HEXTB **DECT S:** • Pin 1 and 2: L0V • Pin 3: PHBIT2 • Pin 4: PHDECT2 • Pin 5: NHDECT2 • Pin 6: NHBIT2 • Pins 7 and 8: L0V
PRINTER (1)  	Not used	•
MUSIC (1)  	8-pin RJ45 connector: hosts an external source of music-on-hold. MUSA: Input impedance 15 Kohms. MUSB: Input impedance 600 Kohms. ETM: external source present.	• Pin 2: JP12 • Pin 3: GNDL • Pin 4: MUSA • Pin 5: ETM • Pin 6: GNDL • Pin 7: MUSB • Pins 1 and 8: NC

(1) Connector front view.

TABLEAU 4.7 DESCRIPTION OF IUCV-D CARD CONNECTOTRS (1/2)

NAME	FUNCTIONS/CHARACTERISTICS	CONTACTS
ALARM / REMOTE CONTROL (1)  	DB25-F connector: hosts the alarms and relays connection: • includes four alarm inputs controlled by a TTL electric level, used for the built-in UAD function. • 4 command relays (2).	• Pin 1: NAL[3] (alarm input 3) • Pin 2: GND NAL[3] • Pin 3: NAL[2] (alarm input 2) • Pin 4: GND NAL[2] • Pin 5: NAL[1] (alarm input 1) • Pin 6: GND NAL[1] • Pin 7: NAL[0] (alarm input 0) • Pin 8: GND NAL[0] • Pin 9: R4B • Pin 10: R4A • Pin 11: R3B • Pin 12: R3A • Pin 13: R2C • Pin 14: R2B • Pin 15: R2A • Pin 16: R1B • Pin 17: R1A • Pin 18: JP12 (+ 12 V) • Pin 19: GNDL • Pins 20 to 25: NC
RSV (1) 	RJ45 connector: reserved for the manufacturer.	

(1) Connector front view

(2) Tableau 4.9 gives details about command relays.

TABLEAU 4.8 DESCRIPTION OF IUCV-D CARD CONNECTORS (2/2)

RELAYS	FUNCTIONS	STATE
R1	Remote control	Work + 12 V (1)
R2	Alarm relays (assignment of alarms by MMC). See Document [1]	Idle + Work (see section 5.6.3.2)
R3	Reduced service or Common Bell	Work (see section 5.6.2.1)
R4	"Watchdog" alarm	Work

(1) The R1 Remote control relay delivers a +12V voltage through an 8 Ohm CTP

TABLEAU 4.9 DESCRIPTION OF IUCV CARD RELAYS

The following figure illustrates the R1, R2 and R3 relays of the iUCV card.

Note: *The relay positions shown are the inactive states.*

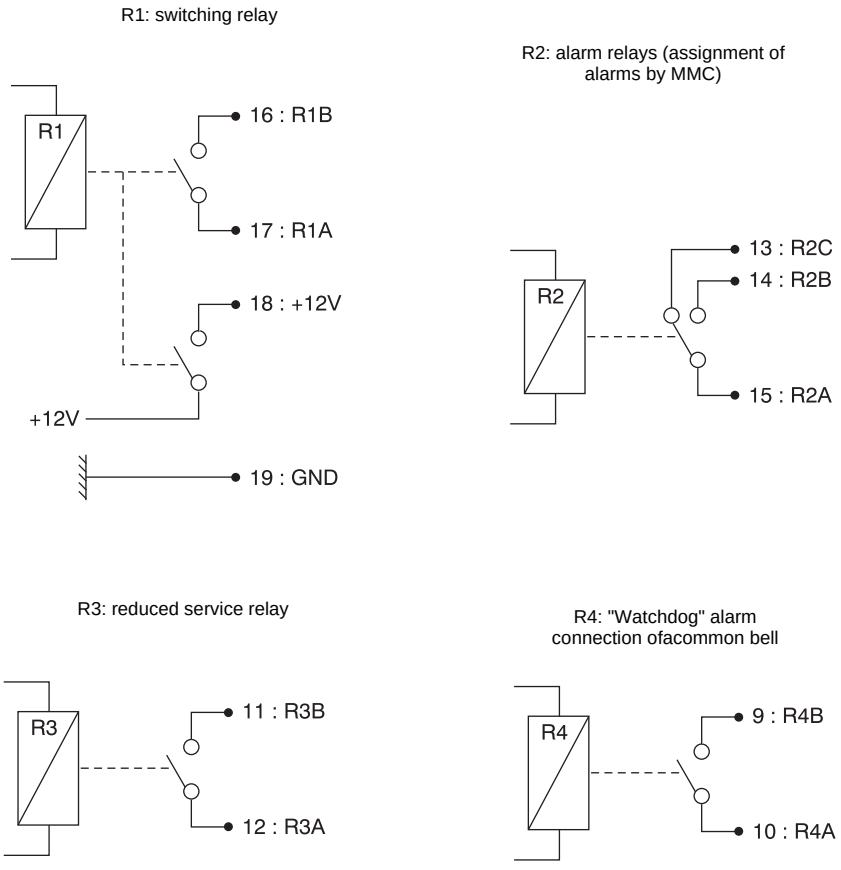


Figure 4.9 *iUCV CARD RELAY CONTACTS*

4.4.2.2 *Indicators*

The iUCV-D card includes 2 sets of 3 superimposed indicators, each indicator can have 2 LEDs:

INDICATOR	STATE	EXPLANATION
S.EXT (green/red)	ON green ON red Off	Correct synchronisation clock (primary network or DECT port) Synchronisation clock fault alarm No correct synchronisation clock (primary network or DECT port)
BVF (green/orange)	Green flashing ON green or OFF	Run (Voice mail operating) Voice mail not working (BVF not activated or faulty)
	ON orange	BVF initialising
S.DECT (green/red)	ON green ON red Flashing green (slowly) Flashing green (average) Flashing green (rapidly)	DECT synchronisation correct DECT synchronisation loss alarm Received synchronisation not validated Synchronisation test Synchronisation successful
MST DECT (green)	On Off	Active synchronisation master iPBX Slave or Master iPBX

TABLEAU 4.10 PRESENTATION OF IUCV-D CARD INDICATORS

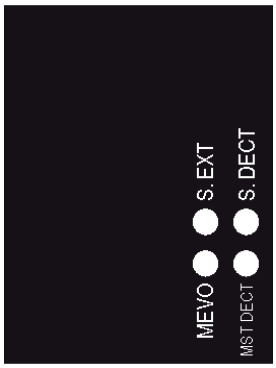


Figure 4.10 *PRESENTATION OF IUCV-D CARD INDICATORS*

4.4.3 Hardware and software configuration

During operation, the IUCV-D card does not have any hardware configuration.

4.4.4 Installation and wiring

The IUCV-D card can be hot-plugged/removed in an operational AXD iPBX.

The equipment connected to the IUCV-D card has the installation details described in Section 5.6:

- External music source
- Common bell (on R3 relay)
- Alarm bell (on R2 relay).

4.5 RUCV-D card

4.5.1 Functional description

The RUCV-D card is installed instead of the UCV-D card in the expansion cabinets. Its primary function is to distribute and monitor the status of the line equipment bus and PCM synchronous trunks at the positions of the expansion cards.

It includes a command interface for 16 equipment cards and 8 PCM trunks.

4.5.2 Physical description

4.5.2.1 Connectors

NAME	FUNCTION	CONTACTS
J1	Female connector, 192 pins: backplane connection. It includes the synchronous junctions used in the expansion cabinet, the reference clocks and system bus	
J2 (rear panel)	Female connector, 48 pins: connection to the main cabinet	
J3	Connector with 8 pins (HE14): reserved for the manufacturer.	

TABLEAU 4.11 DESCRIPTION OF RUCV-D CARD CONNECTORS

4.5.2.2 Indicators

INDICATOR	STATE	EXPLANATION
LINK (green)	Green flashing ON green or OFF	Clock received from UCV-D No clock (UCV stopped or cable disconnected)
ACCS (green)	Green flashing	access to one of the expansion cards of the current cabinet
ACT (green)	ON green Off	Card active Card not active

TABLEAU 4.12 OVERVIEW OF RUCV-D CARD INDICATORS

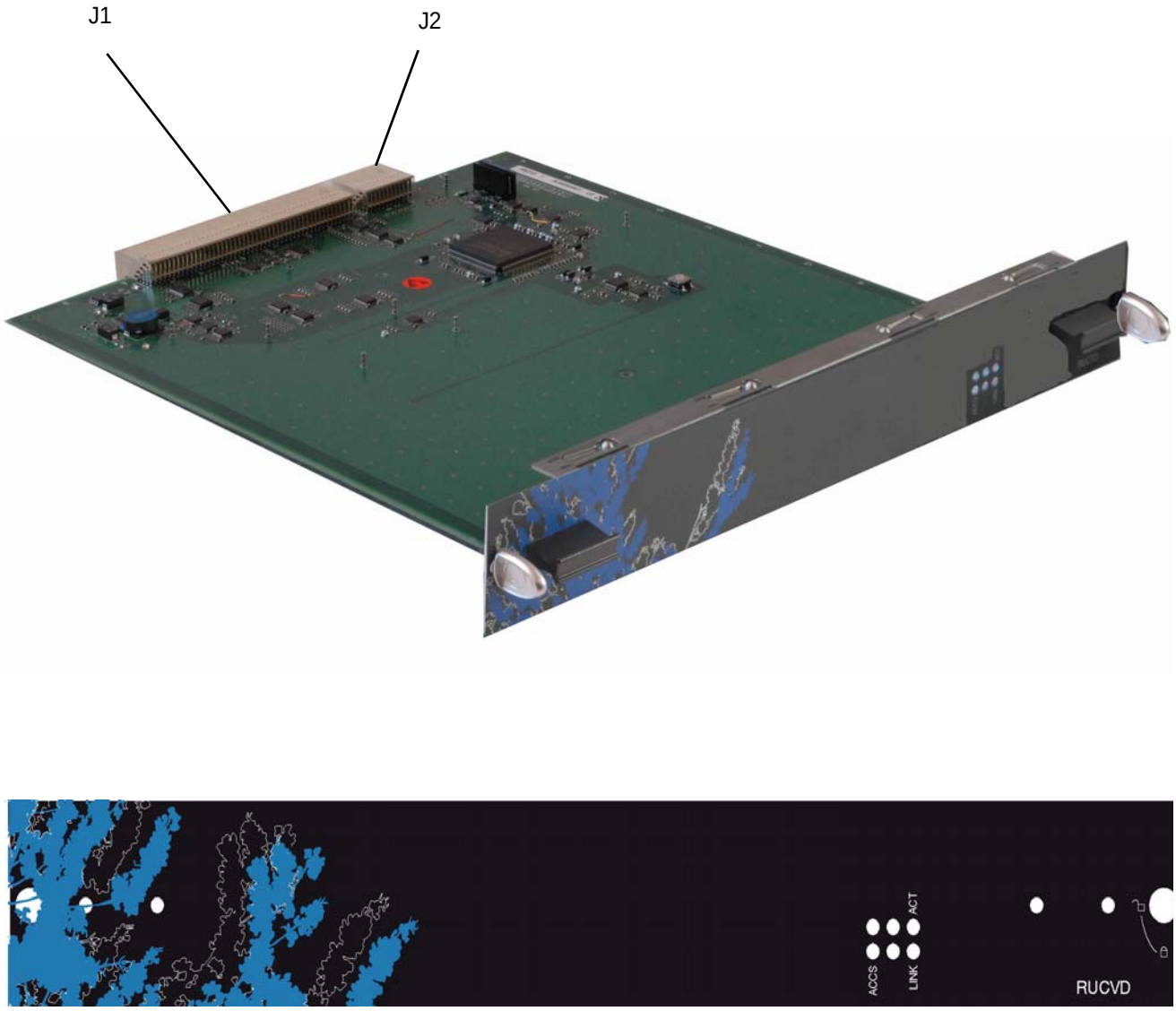


Figure 4.11 *OVERVIEW OF THE RUCV-D CARD*

4.5.3 Hardware and software configuration

This card does not require any hardware or software configuration.

4.5.4 Installation and wiring

The RUCV-D card can be hot-plugged/removed in an operational AXD iPBX.

Warning: *After a switchover the duration of which depends on the configuration (15 s. to 1 min.), the passive CPU card takes over and becomes active in the following three cases:*

- *If the active card is removed*
- *If the active card remains idle for 2 minutes*
- *If a hardware failure is detected on the active UCV-D card (in this case, a hardware fault detection is performed. The unavailability time on the cabinet can, therefore, be up to 3 minutes).*

Conncting an RUCV-D card to a UCV-D card requires a specific cable supplied with the expansion cabinet (see cabinet reference in Section 7.2.7.7).

For a duplex configuration comprising one or two expansion cabinets, a second RUCV-D card must be added to each expansion cabinet. A cable for connecting a main cabinet is provided with each RUCV-D card (see RUCV-D reference in Tableau 7.1).

A colour code is indicated at the back of the AXD cabinets to facilitate connection to the expansion cabinet(s). The XD column shows the connection of cables to the main cabinet. The 2XD and 3XD columns show the connection of cables to the expansion cabinets. You only need to follow this code to carry out the wiring operation.

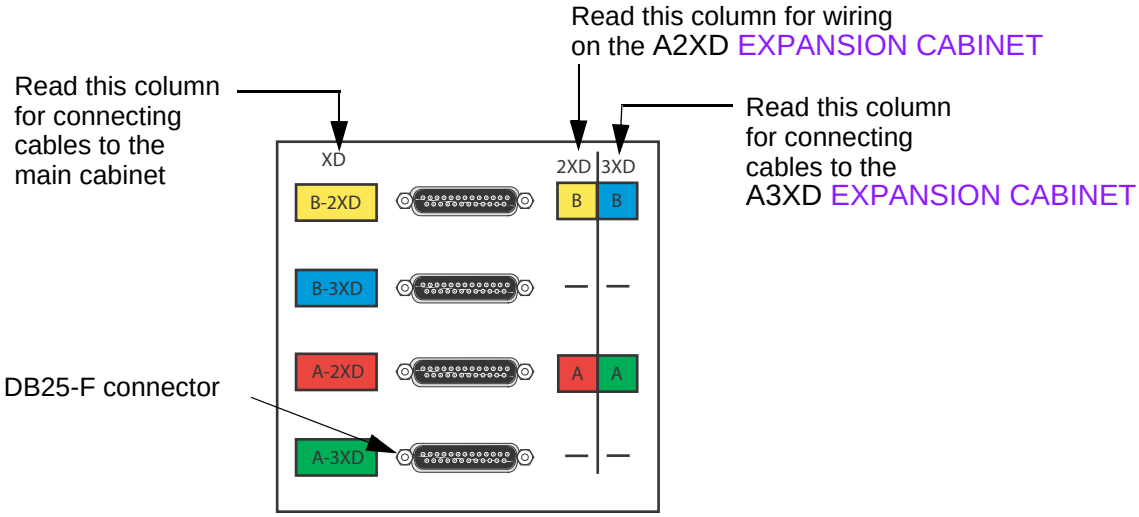


Figure 4.12 *COLOUR CODE FOR CONNECTION TO THE EXPANSION CABINET(S)*

Colour clamps are provided with the cables. Install the clamps on the connection cables, respecting the colour code.

4.5.4.1 Connecting an expansion cabinet (A2XD)

- Simplex configuration: connecting UCV-D (A) / RUCV-D (A) (see Figure 4.13)
  - Install the red clamps at each end of the AXD-A2XD connection cable.

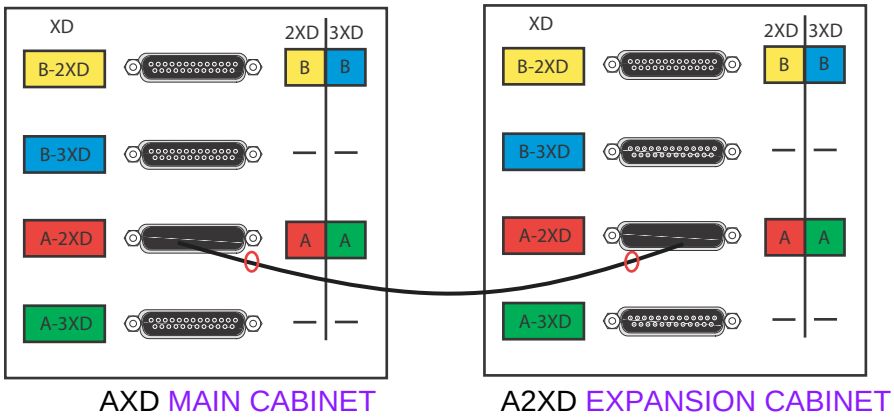


Figure 4.13 *CONNECTING AN EXPANSION CABINET (SIMPLEX CONFIGURATION,* UCV-*D(A)/ RUCV-D(A))*

- Simplex configuration: connecting UCV-D (B) / RUCV-D (B) (see Figure 4.14)
  - Install the yellow clamps at each end of the AXD-A2XD connection cable.

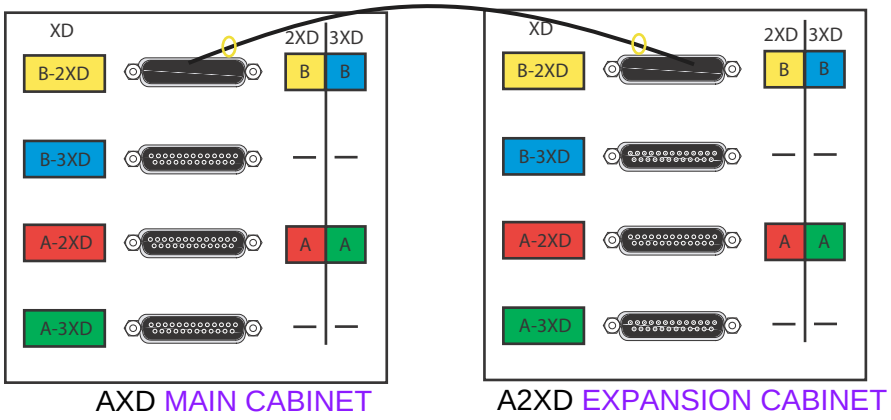


Figure 4.14 *CONNECTING AN EXPANSION CABINET (SIMPLEX CONFIGURATION,* UCV-*D(B)-RUCV-D(B))*

- Duplex configuration: (see Figure 4.15).
  - UCV-D (A) / RUCV-D (A) connection
    - Install the red clamps at each end of the AXD-A2XD connection cable.
  - UCV-D (B) / RUCV-D (B) connection
    - Install the yellow clamps at each end of the AXD-A2XD connection cable.

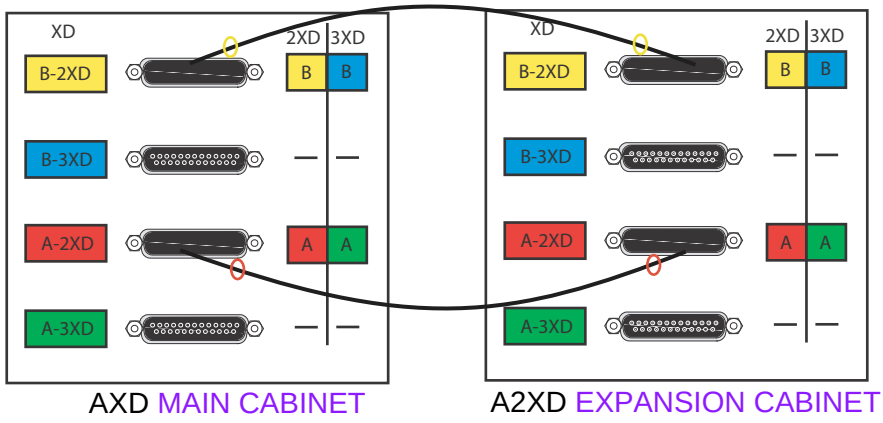


Figure 4.15 *CONNECTING AN EXPANSION CABINET (DUPLEX CONFIGURATION)*

4.5.4.2 Connecting two expansion cabinets (A3XD)

- Simplex configuration: connecting UCV-D (A) / RUCV-D (A) (see Figure 4.16)
  - Install the red clamps at each end of the AXD-A2XD connection cable.
  - Install the green clamps at each end of the AXD-A3XD connection cable.

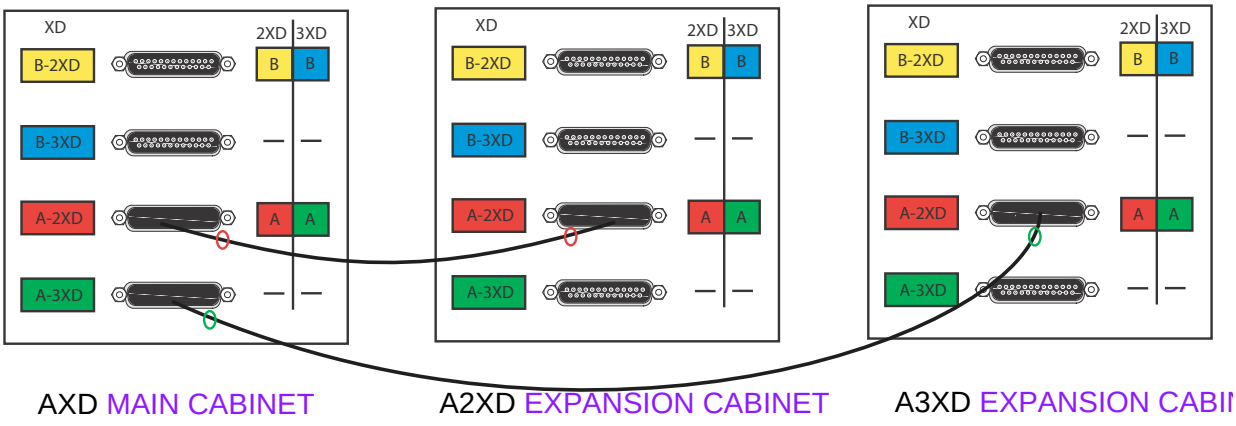


Figure 4.16 *CONNECTING TWO EXPANSION CABINETS (SIMPLEX CONFIGURATION, UCV-D(A)/ RUCV-D(A))*

- Simplex configuration: connecting UCV-D (B) / RUCV-D (B) (see Figure 4.17)
  - Install the yellow clamps at each end of the AXD-A2XD connection cable.
  - Install the blue clamps at each end of the AXD-A3XD connection cable.

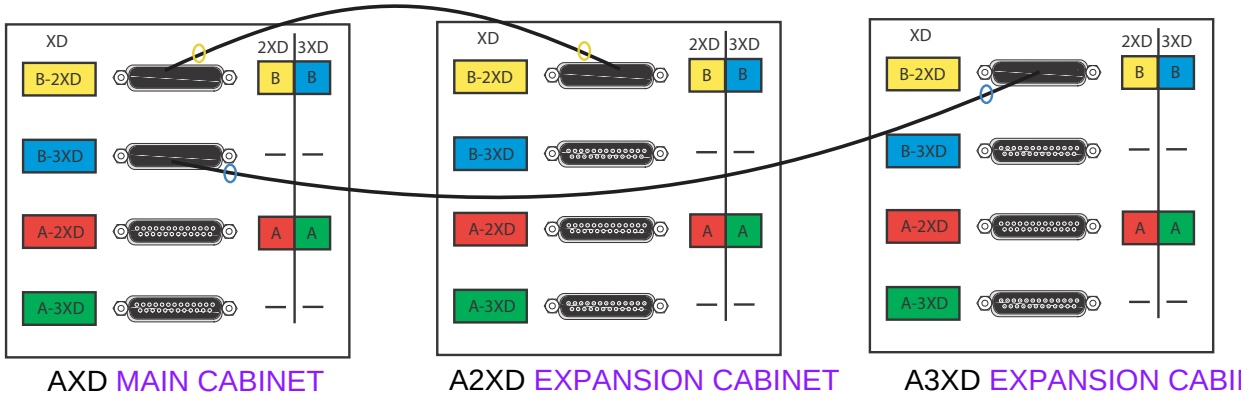


Figure 4.17 *CONNECTING TWO EXPANSION CABINETS (SIMPLEX CONFIGURATION, UCT-D(B)-RUCT-D(B))*

- Duplex configuration: (see Figure 4.18).
  - UCV-D (A) / RUCV-D (A) connection
    - Install the red clamps at each end of the AXD-A2XD connection cable.
    - Install the green clamps at each end of the AXD-A3XD connection cable.
  - UCV-D (B) / RUCV-D (B) connection
    - Install the yellow clamps at each end of the AXD-A2XD connection cable.
    - Install the blue clamps at each end of the AXD-A3XD connection cable.

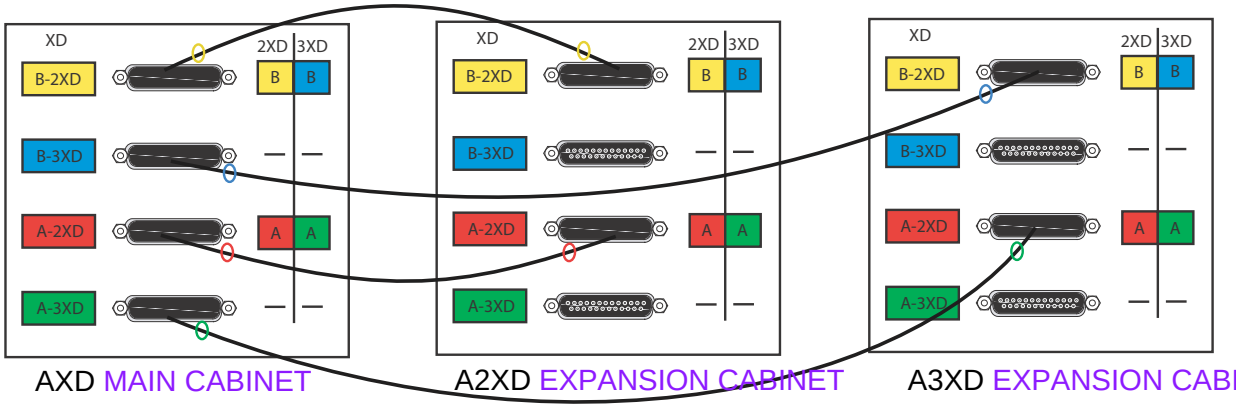


Figure 4.18 *CONNECTING TWO EXPANSION CABINETS (DUPLEX CONFIGURATION)*

4.6 UCV-L card

4.6.1 Functional description

The UCV-L card provides the following functions described in Section3.8.1:

- Data and voice switching
- Signal processing
- Voice mail server
- Defence (management of interface card statuses)
- Synchronisation
- Management of interface card commands.

It also offers the following functions:

- Interfacing with:
  - an operating console via Ethernet access
  - an external music source,
  - a common bell
  - an alarm bell
  - alarm inputs (four),
  - an Ethernet network,
  - the RUCV-L card of an expansion cabinet
- Remote control of an external device (delivering a voltage of +12 V)
- Supervision of expansion cabinets:

  The power on state of an expansion cabinet is detected by recognising a synchronisation pattern. The UCV-L card can command a general "Reset" of the expansion cabinets, provided they are synchronised.
- Locking and unlocking optional software functions, through a removable circuit of the "i-Button" family, used in storing the iPBX ID number
- Power supply: the UCV-L card receives the following on the backplane connector (J1):
  - a +5 V power supply voltage used for the operation of its internal circuits,
  - a +12V power supply voltage used, among others, to supply power to an external device,

    The card has a 3 V CR2032 battery for backing up the clock power supply.

    The battery is installed on the circuit card and is interchangeable. Its service life is 10 years.
- UCV-L has a Flash Disk on the IDE bus, comprising a Compact Flash card fitted on a CF Socket type II. The CF card is not accessible on the front panel.
- The VMAIL function is directly on the CPU card. A quota of compact flash disk space is assigned to this function to store messages and prompts.

  Daughter cards

- The UCV-L card can be fitted with two EIP daughter cards for managing VoIP communications. These two daughter cards have 8/32 channels each for signal processing.

Note: *The UCV-L card is compatible with the ROHS Directive.*

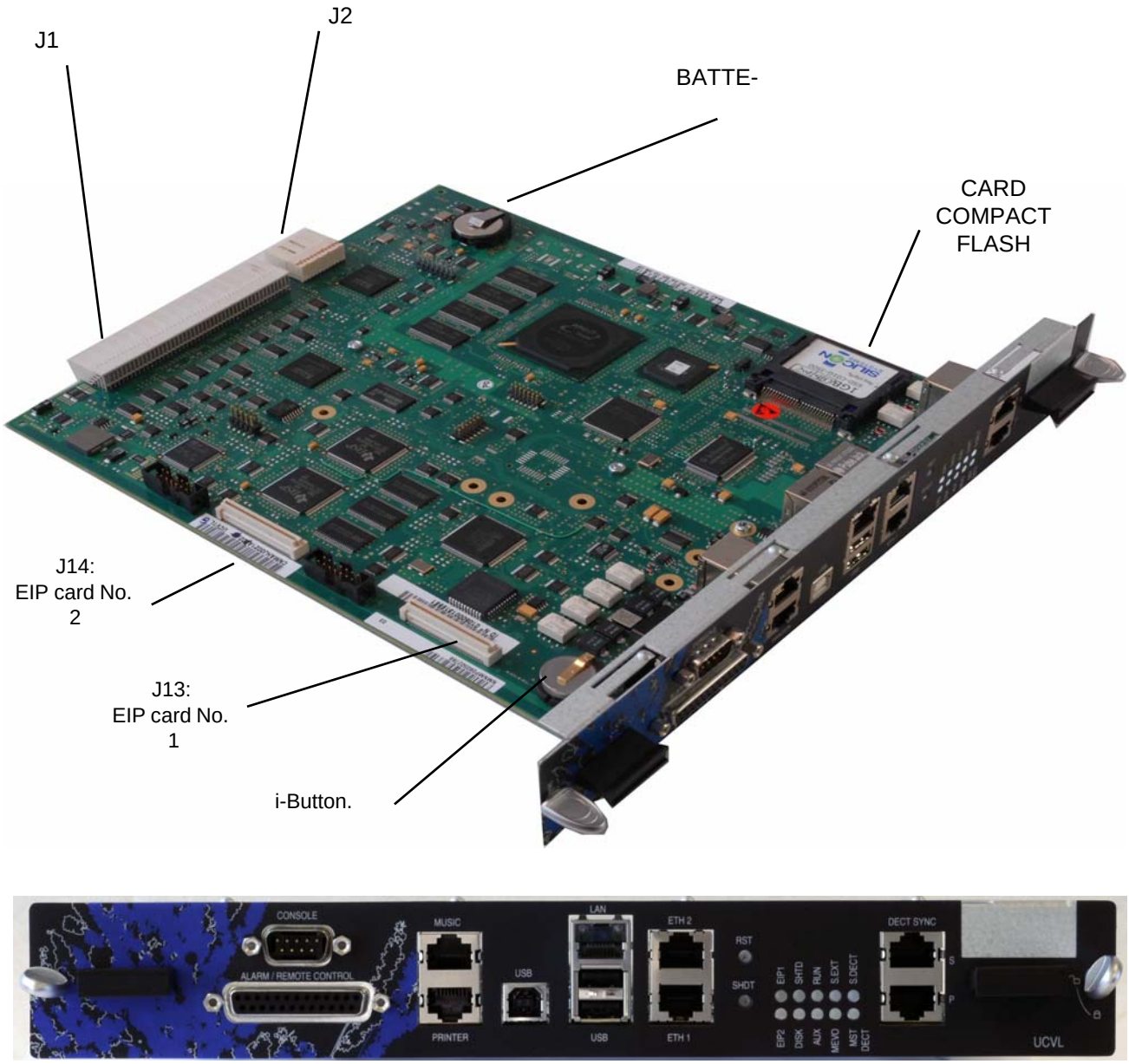
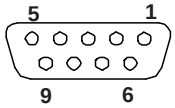
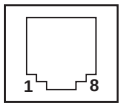


Figure 4.19 *OVERVIEW OF THE UCV-L CARD*

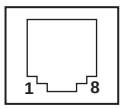
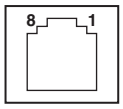
4.6.2 Physical description

4.6.2.1 Connectors

NAME	FUNCTIONS/CHARACTERISTICS	CONTACTS
J1 (rear panel)	Female connector, 192 pins: • Backplane connection • Includes the synchronous junctions (equipment bus) used in the main cabinet, the reference clocks and system bus.	
J2 (rear panel)	Female connector, 48 pins: link with the RUCV card connector in an expansion cabinet.	
J13 and J14	CMS 80-pin connectors: receive two optional daughter cards - EIP No. 1 on J13 and EIP No.2 on J14 – to increase the capacity of the VoIP function.	
CONSOLE/MODEM (1) 	**Caution:** *Local access to operation in specific mode*	• Pin 1: DCD • Pin 2: RXC • Pin 3: TXC • Pin 4: DTR • Pin 5: GND • Pin 6: DSR • Pin 7: RTS • Pin 8: CTS • Pin 9: RI
PRINTER (1) 	Not used. **Note:**	•
USB (A) (1)	USB connector in HOST mode	• Pin 1: PWR0 • Pin 2: DNEG0 • Pin 3: DPOS0 • Pin 4: GND
USB (A) (1)	USB connector in HOST mode	• Pin 1: PWR1 • Pin 2: DNEG1 • Pin 3: DPOS1 • Pin 4: GND

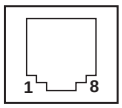
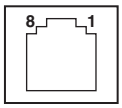
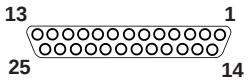
(1) Connector front view.

TABLEAU 4.13 DESCRIPTION OF UCV-L CARD CONNECTORS (1/3)

NAME	FUNCTIONS/CHARACTERISTICS	CONTACTS
USB (B) (1)	USB connector in DEVICE mode	• Pin 1: NC • Pin 2: DNEG2 • Pin 3: DPOS2 • Pin 4: User ID • Pin 5: GND
ETH1 (1)	RJ45 connector	• Pin 1: RXP • Pin 2: RXM • Pin 3: TXP • Pin 4: TLBR • Pin 5: TLBR • Pin 6: TXM • Pin 7: RLBR • Pin 8: RLBR
ETH2 (1)	RJ45 connector:Connection used for the access Administration in the case of configuration of separation of the networks Administration and Telephony. (refer to Manual AMT/PTD/PBX/0101).	• Pin 1: RXP • Pin 2: RXM • Pin 3: TXP • Pin 4: TLBR • Pin 5: TLBR • Pin 6: TXM • Pin 7: RLBR • Pin 8: RLBR
DECT SYNC P (1)  DECT SYNC S (1)  	RJ45 double connector: primary and secondary DECT synchronisation ports, for radio base stations	DECT SYNC P : • Pin 1: AHGA • Pin 2: AHGB • Pin 3: NHBIT1 • Pin 4: NHDECT1 • Pin 5: PHDECT1 • Pin 6: PHBIT1 • Pin 7: HEXTA • Pin 8: HEXTB DECT SYNC S : • Pin 1 and 2: L0V • Pin 3: NHBIT2 • Pin 4: NHDECT2 • Pin 5: PHDECT2 • Pin 6: PHBIT2 • Pins 7 and 8: L0V

(1) Connector front view

TABLEAU 4.14 DESCRIPTION OF UCV-L CARD CONNECTORS (2/3)

NAME	FUNCTION/CHARACTERISTIC	CONTACTS
LAN (1)  	RJ45 connector: host the Ethernet 10/100BASE-TX LAN access. **Note:** *Applications that use the VTI/XML protocol (i2052 in CTI, TWP mode) can be connected directly to this 10/100-TX LAN port.*	• Pin 1: TXP • Pin 2: TXM • Pin 3: RXP • Pin 4: TLBR • Pin 5: TLBR • Pin 6: RXM • Pin 7: RLBR • Pin 8: RLBR
MUSIC (1)  	RJ45 connector: hosts an external source of music-on-hold. MUSA: Input impedance 15 Kohms. MUSB: Input impedance 600 Kohms. ETM: external source present.	• Pin 2: JP12 • Pin 3: GNDL • Pin 4: MUSA • Pin 5: ETM • Pin 6: GNDL • Pin 7: MUSB • Pins 1 and 8: NC
ALARM / REMOTE CONTROL (1)  	DB25-F connector: hosts the alarms and relays connection: • includes four alarm inputs controlled by a TTL electric level, used for the built-in UAD function. • 4 command relays (2).	• Pin 1: NAL[3] (alarm input 3) • Pin 2: GND NAL[3] (alarm input 2) • Pin 3: NAL[2] (alarm input 1) • Pin 4: GND NAL[2] (alarm input 0) • Pin 5: NAL[1] • Pin 6: GND NAL[1] • Pin 7: NAL[0] • Pin 8: GND NAL[0] • Pin 9: R4B • Pin 10: R4A • Pin 11: R3B • Pin 12: R3A • Pin 13: R2C • Pin 14: R2B • Pin 15: R2A • Pin 16: R1B • Pin 17: R1A • Pin 18: JP12 (+ 12 V) • Pin 19: GNDL • Pin 19: R2B • Pins 21 to 25: NC
UART Debug	HE14 connector.	• Pin 1: TXA • Pin 2: GND • Pin 3: RXA • Pin 4: GND

(1) Connector front view.

(2) Table 4.3 gives the details relating to the command relays.

TABLEAU 4.15 DESCRIPTION OF UCV-L CARD CONNECTORS (3/3)

RELAYS	FUNCTIONS	STATE
R1	Remote control	Work + 12 V (1)
R2	Alarm relays (assignment of alarms by MMC). See Document [1]	Idle + Work (see Section 5.6.3.2, sec contact)
R3	Reduced service or Common Bell	Work (see Section 5.6.2.2, sec contact)
R4	"Watchdog" alarm	Work (sec contact)

(1) The R1 Remote control relay delivers a +12V voltage through an 8 Ohm CTP

(2) The R2, R3 and R4 relays deliver +12V through a 25 Ohms CTP.

TABLEAU 4.16 DESCRIPTION OF UCV CARD RELAYS

Figure 4.20 illustrates the R1, R2 and R3 relays of the UCV card.

Note: *The relay positions shown are the inactive states.*

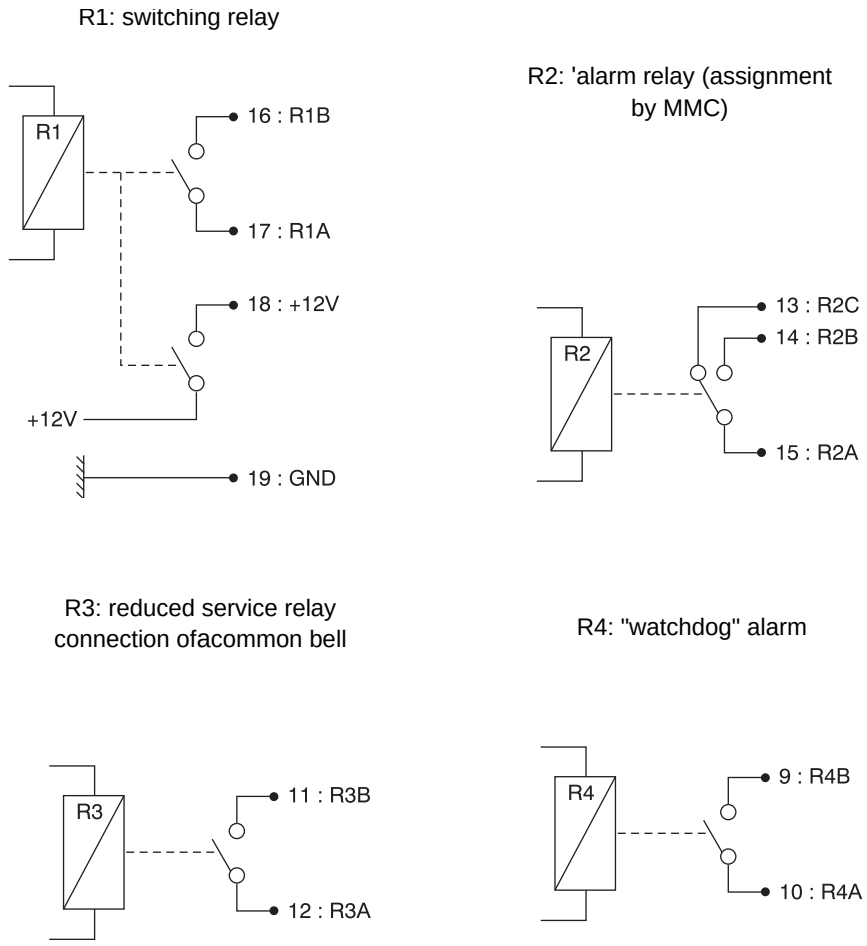


Figure 4.20 *UCV CARD RELAY CONTACTS*

4.6.2.2 *Indicators*

The UCV-L card includes 2 sets of 5 superimposed indicators; each indicator may have 2 LEDs:

INDICATOR	STATE	EXPLANATION
EIP No.1 Lnk/Speed Off	ON green ON yellow	100 MHz, activity on Ethernet link: EIP daughter card No.1 10 MHz, activity on Ethernet link: EIP daughter card No.1
EIP No. 2	ON green ON yellow	100 MHz, activity on Ethernet link: EIP daughter card No.2 10 MHz, activity on Ethernet link: EIP daughter card No.2
DISK	ON green	Disk is being used
SHTD Linux shutdown	Red flashing ON green Off	PBX shutting down Power off authorisation Normal operation
RUN (green)	On steady Flashing	Operating problem Card in operation
AUX (green)	On	not used
BVF (green/orange)	Green flashing ON green or OFF	Run (Voice mail operating) Voice mail not working (BVF not activated or faulty)
	ON orange	BVF initialising
S.EXT (green/red)	ON green ON red Off	Correct synchronisation clock (primary network or DECT port) Synchronisation clock fault alarm No correct synchronisation clock (primary network or DECT port)
S.DECT (green/red)	ON green ON red Flashing green (slowly) Flashing green (average) Flashing green (rapidly)	DECT synchronisation correct DECT synchronisation loss alarm Received synchronisation not validated Synchronisation test Synchronisation successful
MST DECT (green)	On Off	Active synchronisation master iPBX Slave or Master iPBX
LAN 2 LEDs integrated in the connector	- 1 yellow LED: Off On Flashing - 1 green/yellow LED: Off ON green ON yellow	 Half Duplex link. Full Duplex link. Collisions Link not set up. Link set up at 100 Mb/s. Link set up at 10 Mb/s.

TABLEAU 4.17 PRESENTATION OF UCV-L CARD INDICATORS

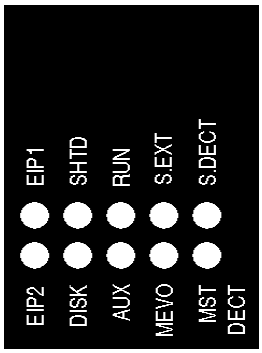


Figure 4.21 *PRESENTATION OF UCV-L CARD INDICATORS*

Pushbuttons

The front panel includes:

- An **"RST"** pushbutton for resetting the iPBX
- A "**SHTD**" (shutdown) push button:

Same procedure as for AXD, AXL and AXS/AXS12.

From the buttons on the CPU card front panel, you have to distinguish between two types of restart operations:

- Restart with OS reboot (shutting down and restarting the iPBX)
- Forced restart (not recommended in normal operation).

Restart with OS reboot (shutting down and restarting the iPBX)

Pressing and holding down the "**SHTD**" button (5 seconds), triggers an "OS reboot" (shutdown + iPBX restart).

Forced restart (not recommended in normal operation)

Press "**RST**". This button should only be used as last resort if pressing the "**SHTD**" button does not work.

4.6.3 Hardware and software configuration

During operation, the UCV-L card does not have any hardware configuration. All the configurations are performed by MMC from Aastra Management Portal:

- Master/Slave mode of the synchronisation port (by default set to Master).
- Priority/Non Priority mode of the synchronisation port (by default set to Non Priority).
- Setting of the input level for the external music on hold.
- Setting of the delay to apply to the DECT synchronisation signal.

4.6.4 Installation and wiring

The equipment connected to the UCV-L card has the installation details described in Section 5.6:

- Operating console
- External music source
- Common bell (on R3 relay)
- Alarm bell (on R2 relay)

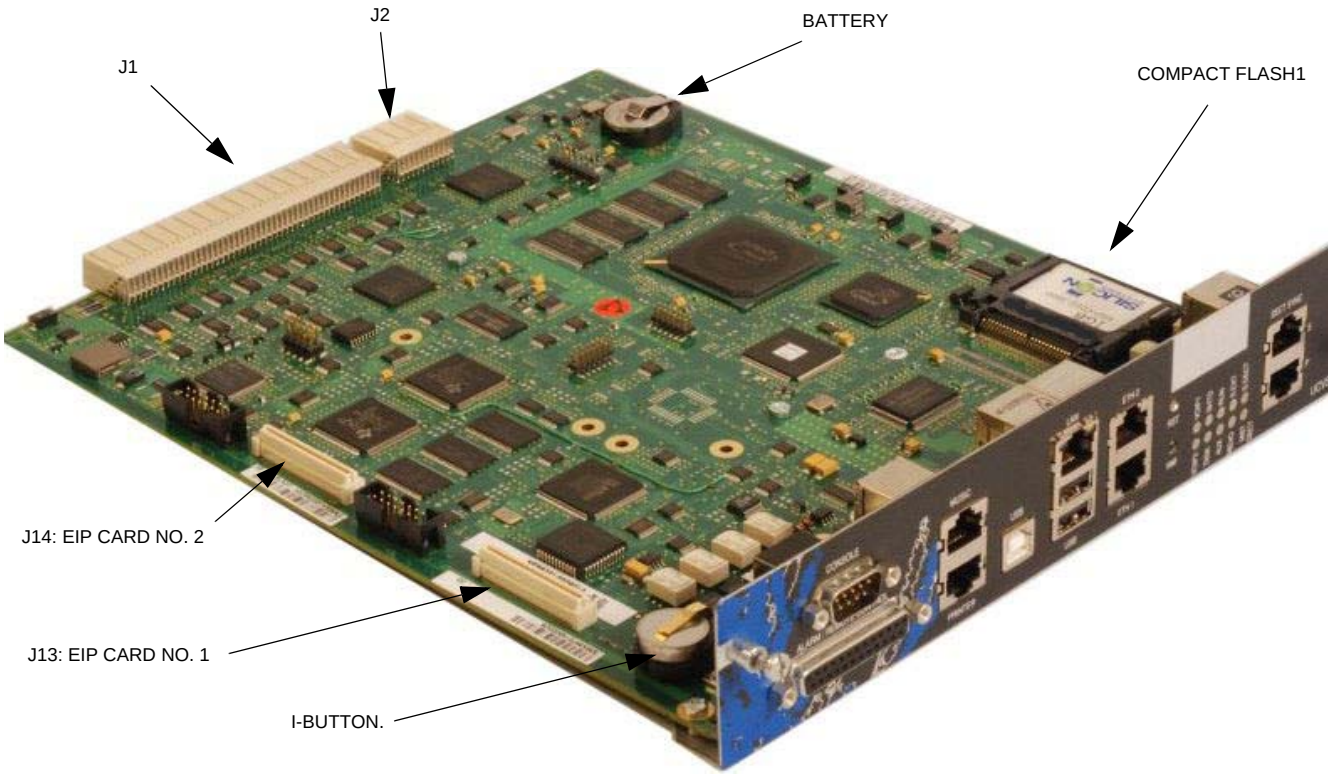
4.7 UCV-S cards

4.7.1 Functional description

The UCV-S card provides the same functions as the UCV-L described in Section 4.6.1 **Daughter cards**

- The UCV-S card can be fitted with two EIP daughter cards for managing VoIP communications. These two daughter cards have 8/32 channels each for signal processing.

Note: *The UCV-S card is compatible with the ROHS Directive.*



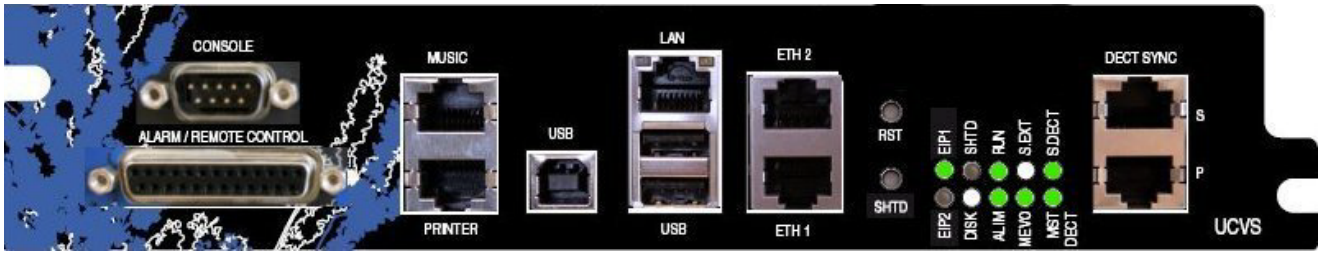


Figure 4.22 *OVERVIEW OF THE UCV-S CARD*

4.7.2 Physical description

4.7.2.1 Connectors

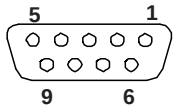
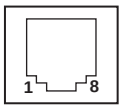
NAME	FUNCTIONS/CHARACTERISTICS	CONTACTS
J1 (rear panel)	Female connector, 192 pins: • Backplane connection • Includes the synchronous junctions (equipment bus) used in the main cabinet, the reference clocks and system bus.	
J2 (rear panel)	Female connector, 48 pins: link with the RUCV card connector in an expansion cabinet.	
J13 and J14	80-pin CMS connectors: receive two optional daughter cards - EIP No. 1 on J13 and EIP No.2 on J14 – to increase the capacity of the VoIP function.	
CONSOLE/MODEM (1)  	**Caution:** *Local access to operation in specific mode*	• Pin 1: DCD • Pin 2: RXC • Pin 3: TXC • Pin 4: DTR • Pin 5: GND • Pin 6: DSR • Pin 7: RTS • Pin 8: CTS • Pin 9: RI
PRINTER (1)  	Not used. **Note:**	•
USB (A) (1)	USB connector in HOST mode	• Pin 1: PWR0 • Pin 2: DNEG0 • Pin 3: DPOS0 • Pin 4: GND
USB (A) (1)	USB connector in HOST mode	• Pin 1: PWR1 • Pin 2: DNEG1 • Pin 3: DPOS1 • Pin 4: GND

TABLEAU 4.18 DESCRIPTION OF UCV-S CARD CONNECTORS (1/3)

NAME	FUNCTIONS/CHARACTERISTICS	CONTACTS

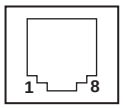
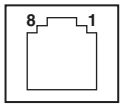
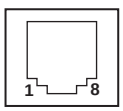
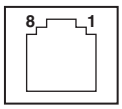
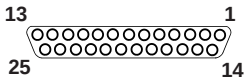
USB (B) (1)	USB connector in DEVICE mode	• Pin 1: NC • Pin 2: DNEG2 • Pin 3: DPOS2 • Pin 4: User ID • Pin 5: GND
ETH1 (1)	RJ45 connector	• Pin 1: RXP • Pin 2: RXM • Pin 3: TXP • Pin 4: TLBR • Pin 5: TLBR • Pin 6: TXM • Pin 7: RLBR • Pin 8: RLBR
ETH2 (1)	RJ45 connector:Connection used for the access Administration in the case of configuration of separation of the networks Administration and Telephony. (refer to Manual AMT/PTD/PBX/0101).	• Pin 1: RXP • Pin 2: RXM • Pin 3: TXP • Pin 4: TLBR • Pin 5: TLBR • Pin 6: TXM • Pin 7: RLBR • Pin 8: RLBR
DECT SYNC P (1)  DECT SYNC S (1)  	RJ45 double connector: primary and secondary DECT synchronisation ports, for radio base stations	DECT SYNC P : • Pin 1: AHGA • Pin 2: AHGB • Pin 3: NHBIT1 • Pin 4: NHDECT1 • Pin 5: PHDECT1 • Pin 6: PHBIT1 • Pin 7: HEXTA • Pin 8: HEXTB DECT SYNC S : • Pin 1 and 2: L0V • Pin 3: NHBIT2 • Pin 4: NHDECT2 • Pin 5: PHDECT2 • Pin 6: PHBIT2 • Pins 7 and 8: L0V
LAN (1)  	RJ45 8-pin connector: host the Ethernet 10/100BASE-TX LAN access. **Note:** *Applications that use the VTI/XML protocol (i2052 in CTI, TWP mode) can be connected directly to this 10/100-TX LAN port.*	• Pin 1: TXP • Pin 2: TXM • Pin 3: RXP • Pin 4: TLBR • Pin 5: TLBR • Pin 6: RXM • Pin 7: RLBR • Pin 8: RLBR

TABLEAU 4.19 DESCRIPTION OF UCV-S CARD CONNECTORS (2/3)

NAME	FUNCTION/CHARACTERISTIC	CONTACTS
MUSIC (1)  	RJ45 8-pin connector: hosts an external source of music-on-hold. MUSA: Input impedance 15 Kohms. MUSB: Input impedance 600 Kohms. ETM: external source present.	• Pin 2: JP12 • Pin 3: GNDL • Pin 4: MUSA • Pin 5: ETM • Pin 6: GNDL • Pin 7: MUSB • Pins 1 and 8: NC
ALARM / REMOTE CONTROL (1)  	DB25-F connector: hosts the alarms and relays connection: • includes four alarm inputs controlled by a TTL electric level, used for the built-in UAD function. • 4 command relays (2).	• Pin 1: NAL[3] (alarm input 3) • Pin 2: GND NAL[3] (alarm input 2) • Pin 3: NAL[2] (alarm input 1) • Pin 4: GND NAL[2] (alarm input 0) • Pin 5: NAL[1] • Pin 6: GND NAL[1] • Pin 7: NAL[0] • Pin 8: GND NAL[0] • Pin 9: R4B • Pin 10: R4A • Pin 11: R3B • Pin 12: R3A • Pin 13: R2C • Pin 14: R2B • Pin 15: R2A • Pin 16: R1B • Pin 17: R1A • Pin 18: JP12 (+ 12 V) • Pin 19: GNDL • Pin 19: R2B • Pins 21 to 25: NC
UART Debug	HE14 connector.	• Pin 1: TXA • Pin 2: GND • Pin 3: RXA • Pin 4: GND

(1) Connector front view.

(2) Tableau 4.16 and Figure 4.20 give the details relating to the command relays.

TABLEAU 4.20 DESCRIPTION OF UCV-S CARD CONNECTORS (3/3)

4.7.2.2 *Indicators*

The UCV-S card includes 2 sets of 5 superimposed indicators, each indicator can have 2 LEDs:

INDICATOR	STATE	EXPLANATION
EIP No.1 Lnk/Speed Off: inactive	ON green ON yellow	100 MHz, activity on Ethernet link: EIP daughter card No.1 10 MHz, activity on Ethernet link: EIP daughter card No.1
EIP No. 2	ON green ON yellow	100 MHz, activity on Ethernet link: EIP daughter card No.2 10 MHz, activity on Ethernet link: EIP daughter card No.2
DISK	ON green	Disk is being used
SHTD Linux shutdown	Red flashing ON green Off	PBX shutting down Power off authorisation Normal operation
RUN (green)	On steady Flashing	Operating problem Card in operation
PWR (green)	On steady Flashes slowly Off or rapid flashing	If one cabinet, indicates mains presence and operation of the rectifier in the cabinet power supply unit. If two cabinets (main cabinet and expansion cabinet), indicates mains presence and operation of the rectifier in the power supply unit of both cabinets. If one cabinet, indicates mains failure and thus cabinet operation with the battery. If two cabinets (main cabinet and expansion cabinet), indicates mains failure and thus operation of both cabinets with batteries. Abnormal operation. Examples: expansion cabinet not powered, expansion cabinet powerd by battery and main cabinet powered from the mains…
BVF (green/orange)	Green flashing ON green or OFF	Run (Voice mail operating) Voice mail not working (BVF not activated or faulty)
	ON orange	BVF initialising
S.EXT (green/red)	ON green ON red Off	Correct synchronisation clock (primary network or DECT port) Synchronisation clock fault alarm No correct synchronisation clock (primary network or DECT port)

TABLEAU 4.21 PRESENTATION OF UCV-S CARD INDICATORS (1/2)

S.DECT (green/red)	ON green ON red Flashing green (slowly) Flashing green (average) Flashing green (rapidly)	DECT synchronisation correct DECT synchronisation loss alarm Received synchronisation not validated Synchronisation test Synchronisation successful

TABLEAU 4.21 PRESENTATION OF UCV-S CARD INDICATORS (1/2)

INDICATOR	STATE	EXPLANATION
MST DECT (green)	On Off	Active synchronisation master iPBX Slave or Master iPBX
LAN 2 LEDs integrated into RJ45	- 1 yellow LED: Off On Flashing - 1 green/yellow LED: Off ON green ON yellow	 Half Duplex link. Full Duplex link. Collisions Link not set up. Link set up at 100 Mb/s. Link set up at 10 Mb/s.

TABLEAU 4.22 PRESENTATION OF UCV-S CARD INDICATORS (2/2)

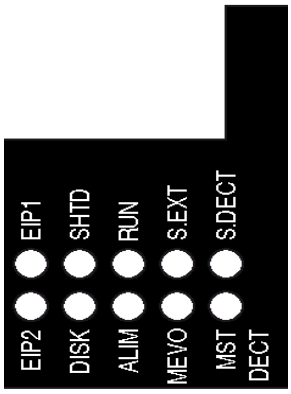


Figure 4.23 *PRESENTATION OF UCV-S CARD INDICATORS*

Pushbuttons

- An "**RST**" push button. It should only be used as a last resort when the SHTD push button is not working.
- A "**SHTD**" (shutdown) push button:

From the buttons on the CPU card front panel, you have to distinguish between two types of restart operations:

- Restart with OS reboot (shutting down and restarting the iPBX)

- Forced restart (not recommended in normal operation).

Restart with OS reboot (shutting down and restarting the iPBX)

Pressing and holding down the "**SHTD**" button (5 seconds), triggers an "OS reboot" (shutdown + iPBX restart).

Forced restart (not recommended in normal operation)

Press "**RST**". This button should only be used as last resort if pressing the "**SHTD**" button does not work.

4.7.3 Hardware and software configuration

The following configurations are performed by MMC from Aastra Management Portal:

- configuration of the T lines, S or DECT terminal.
- Master/Slave mode of the synchronisation port (by default set to Master).
- Priority/Non Priority mode of the synchronisation port (by default set to Priority).
- setting of the input level for the external music on hold.
- setting of the delay to be applied to the DECT synchronisation signal.

The built-in 3 V battery is still in circuit (no microswitch).

4.7.4 Installation and wiring

The following equipment connected to the UCV-S card has the installation details described in Section 5.6:

- Operating console
- External music source
- Common bell
- Alarm bell.

4.8 EXT1-S card

4.8.1 Functional description

The EXT1-S card offers the following functions:

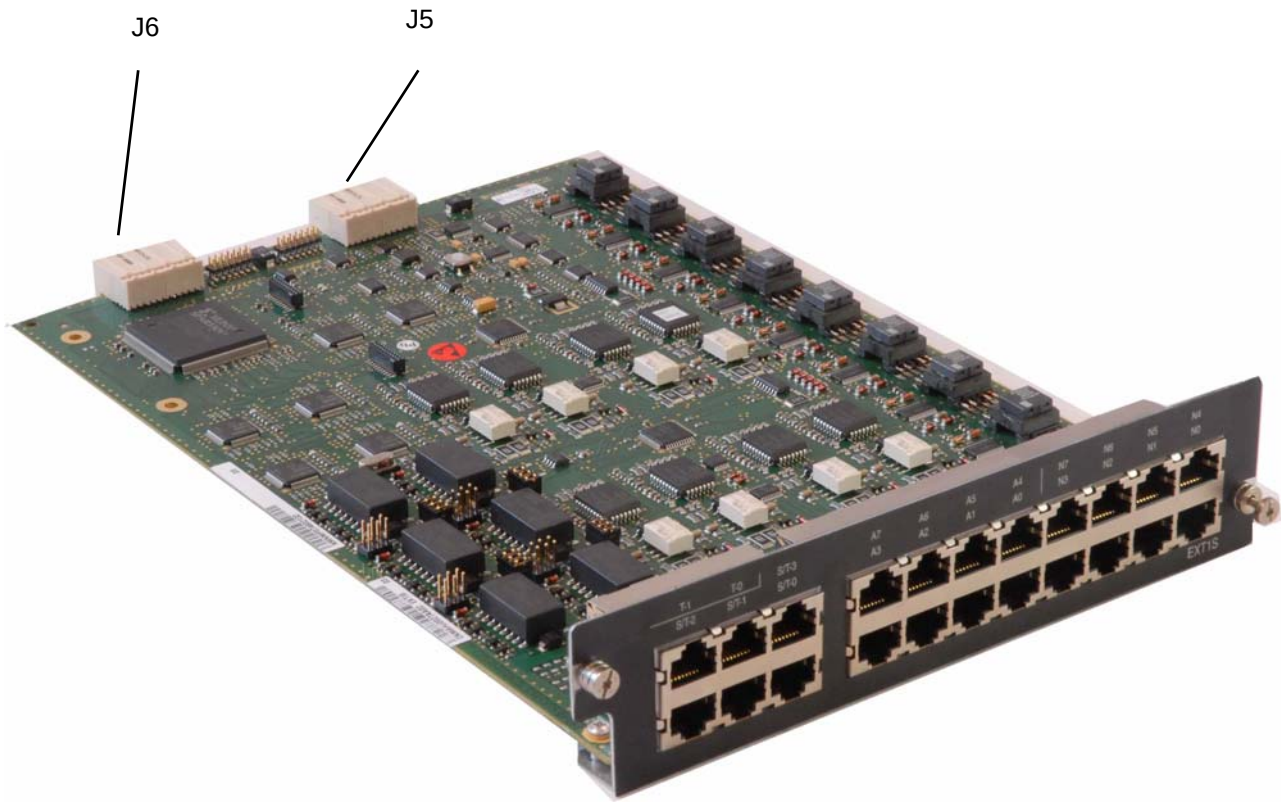
- additional interfaces for telephone equipment:
  - 8 analogue set interfaces (type LA16X),
  - 8 digital set interfaces (type LN16X),
  - 4 configurable ISDN interfaces:
    - In T0 for connection to the network
    - Or in S0 for connecting terminals or DECT base stations (with 2 channels and 4 channels if fitted with an ADPCM16V daughter card).

Note: *- The integrated S0 accesses manage synchronisation by bit M frame S.*
- The AXS cabinet delivers 48V remotely over an S0 link.
- Factory configuration of the EXT1S card: remote power supply is activated on the 4 interfaces.

  - 2 ISDN: T0 interfaces for connection to the network.
- Power supply is via a backplane connector. The EXT1-S card receives the following over this specific connector:
  - +5 V and +3.3 V power supply voltages used for its internal circuit operations
  - a - 48 V power supply voltage for analogue and digital sets,
  - a 70V AC power supply voltage for the ringing current of analogue sets.

Daughter cards

- The EXT1-S card can receive an ADPCM16V daughter card which offers the 4-channel base station function on the ISDN ports integrated into the card (S/T0 to S/T3). See the description of the ADPCM16V daughter card in Section 4.13.2.2.



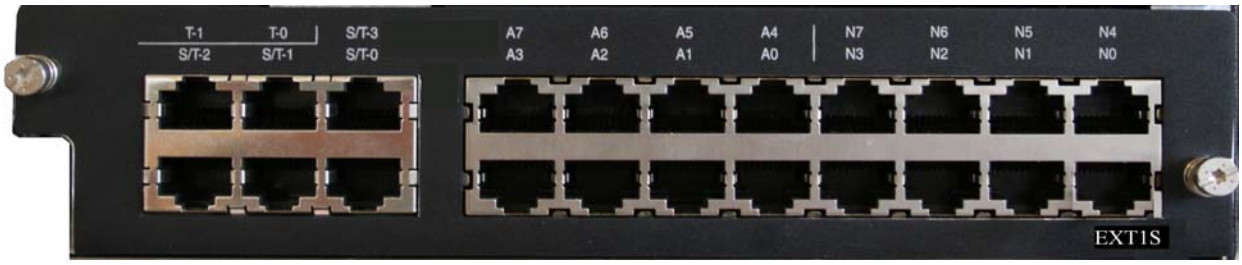
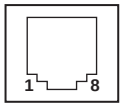
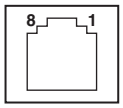
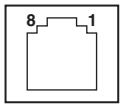
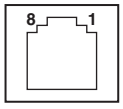


Figure 4.24 OVERVIEW OF THE EXT1-S CARD

4.8.2 Physical description

The EXT1-S card is fitted on the front panel of RJ45 sockets for the equipment interfaces

4.8.2.1 Connectors

NAME	Function/characteristic	contacts
J5	48-pin connector for LVDS link with the processor card	
J6	48-pin connector for power supply, and clock and interruption signals.	
S/T0, S/T1, S/T2, S/T3 (1) 	RJ45 connectors: T0/S0 access. **Note:** *Connecting S0 peripherals (S sets or DECT base stations) requires a twisted cable or S0/T0 adaptor.*	• Pins 1 and 2: NC • Pin 3: EDX • Pin 4: RDX • Pin 5: NRDX • Pin 6: NEDX • Pins 7 and 8: NC
T0, T1 (1) 	RJ45 connectors: T0 access.	• Pins 1 and 2: NC • Pin 3: EDX • Pin 4: RDX • Pin 5: NRDX • Pin 6: NEDX • Pins 7 and 8: NC
A0 to A7 (1) 	RJ45 connectors: used to connect 8 analogue sets.	• Pin 4: LAX+ • Pin 5: LAX- • Pins 1, 2, 3, 6, 7, and 8: NC
N0 to N7 (1) 	RJ45 connectors: used to connect 8 digital sets.	• Pin 4: LNX+ • Pin 5: LNX- • Pins 1, 2, 3, 6, 7, and 8: NC

(1) Connector front view.

(2) Tableau 4.16 and Figure 4.20 give the details relating to the command relays.

TABLEAU 4.23 DESCRIPTION OF EXT1-S CARD CONNECTORS

4.8.2.2 Indicators

The EXT1-S card does not have any indicators on the front panel.

4.8.3 Hardware and software configuration

The EXT1-S card has 4 jumpers for configuring remote power supply of the S/T0 to S/T3 accesses (one jumper block for each access). These jumpers are fitted on connectors J29_xx and J30_xx located on the front panel of the EXT1-S card (J29_30 for S/T0 access, J29_31 and J30_31 for S/T1 access).

The four accesses are placed vertically on the card. The one at the bottom is the S/T0 access and the one at the top the S/T3 access.

Depending on the position of the jumpers, the S/T0 to S/T3 accesses will be configured as follows:

- No remote power supply.
- Remote supply of - 48 V.

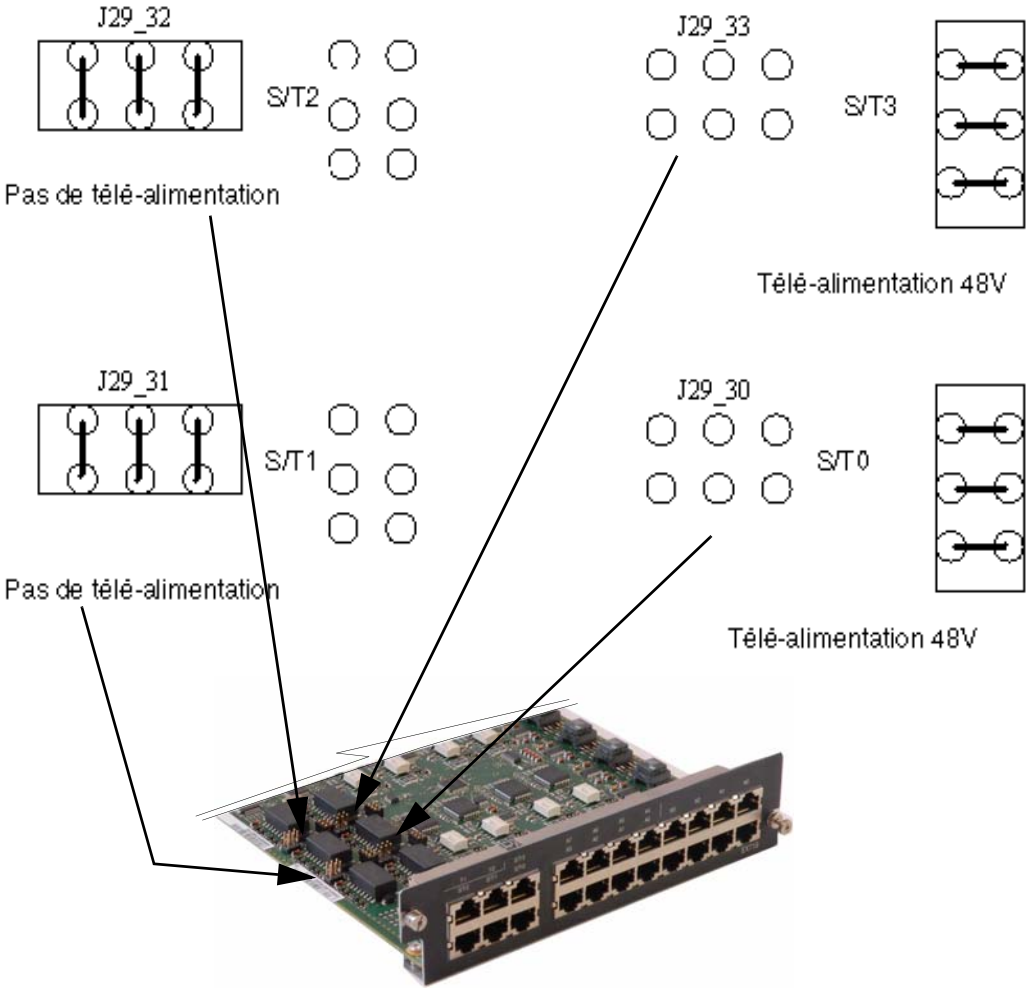


Figure 4.25 *CONFIGURING REMOTE POWER SUPPLY OF S/T0 TO S/T3 ACCESSES*

4.8.3.1 Installation and wiring

The A0 to A7 interfaces of the EXT1-S card have installation details identical to those of the interfaces of the LA16X card (see Section 4.14.1.5).

The N0 to N7 interfaces of the EXT1-S card have installation details identical to those of the interfaces of the LN16X card (see Section 4.14.5.5).

The S/T0 to S/T3 interfaces of the EXT1-S card have installation details identical to those of the interfaces of the LD4 card for T accesses (see Section 4.13.2.1) but are different for S accesses.

Caution: *The S/T accesses of the EXT1-S card are wired in T. To connect S peripherals (S sets or DECT base stations), a twisted cable or S0/T0 adaptor (see Figure 4.26) is, therefore, required.*

The T0 and T1 interfaces of the EXT1-S card have installation details identical to those of the T interfaces of the LD4 card (see section 4.13.2.1).

Wiring DECT base stations

Each base station is connected to an ISDN S0 (BRI) interface of an EXT1-S card, and uses two pairs: 1 transmit pair and 1 reception pair (refer to document [6] (see Section1.3) for more information).

A twisted cable or S0/T0 adaptor is required to connect DECT base stations.

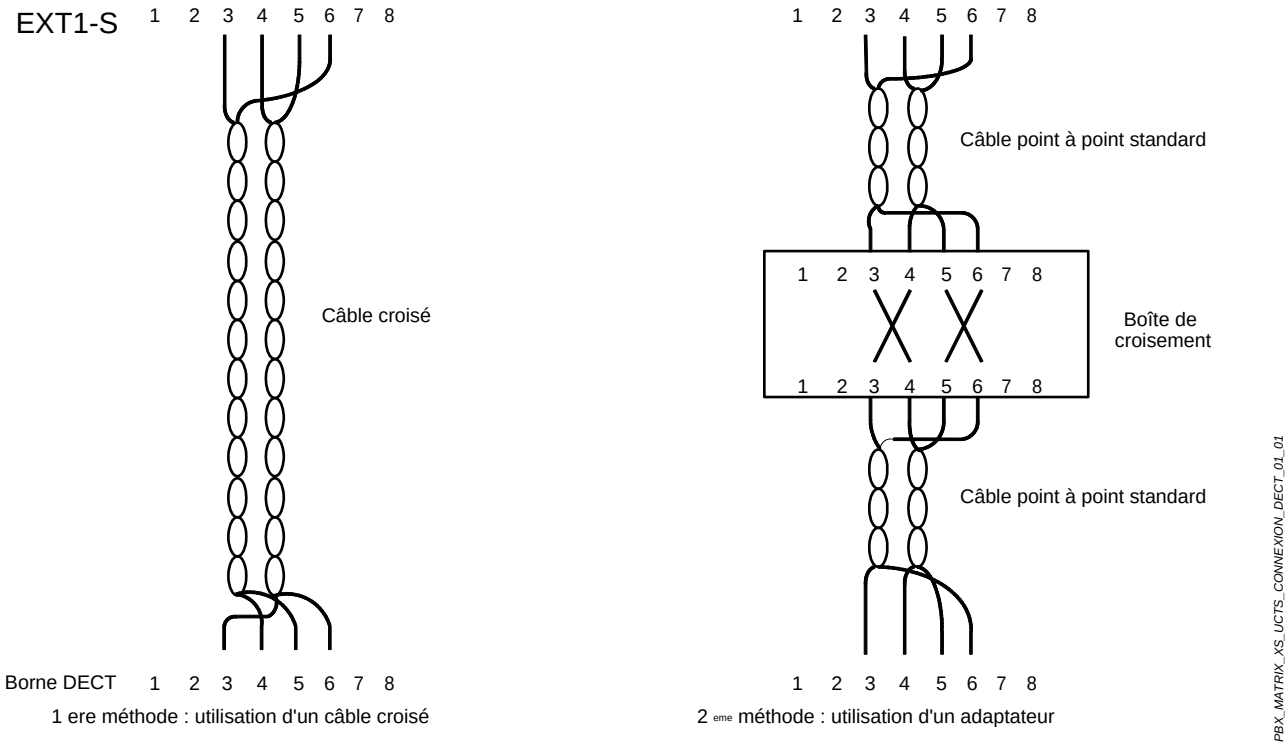

EXT1-S
1 2 3 4 5 6 7 8
Câble croisé
Borne DECT
1 2 3 4 5 6 7 8
1 ere méthode : utilisation d'un câble croisé
Câble point à point standard
Boîte de croisement
Câble point à point standard
2 eme méthode : utilisation d'un adaptateur
PBX_MATRIX_XS_UCTS_CONNEXION_DECT_01_01

Figure 4.26 CONNECTING A DECT BASE STATION TO AN S0 INTERFACE OF THE EXT1-S CARD

EXT1-S card RJ45 connector	Base station RJ45 connector
Pin 6 (NED1)	Pin 5
Pin 3 (ED1)	Pin 4
Pin 5 (NRD1)	Pin 6
Pin 4 (RD1)	Pin 3

TABLEAU 4.24 S0 INTERFACE LINK WITH DECT BASE STATION (TWISTED CABLE)

4.8.4 Hardware and software configuration

The following configurations are performed by MMC from Aastra Management Portal:

- configuration of the T lines, S or DECT terminal.
- Master/Slave mode of the synchronisation port (by default set to Master).
- Priority/Non Priority mode of the synchronisation port (by default set to Priority).
- setting of the input level for the external music on hold.
- setting of the delay to be applied to the DECT synchronisation signal.

The built-in 3 V battery is still in circuit (no microswitch).

4.8.5 Installation and wiring

The following equipment connected to the UCV-S12 card has the installation details described in Section 5.6:

- Operating console
- External music source
- Common bell
- Alarm bell.

4.9 EXT1-S12 card

4.9.1 Functional description

The EXT1-S12 card offers the following functions:

- additional interfaces for telephone equipment:
  - 8 analogue set interfaces (type LA16X),
  - 4 digital set interfaces (type LN16X),
  - 4 configurable ISDN interfaces:
    - In T0 for connection to the network
    - Or in S0 for connecting terminals or DECT base stations (with 2 channels and 4 channels if fitted with an ADPCM16V daughter card).

Note: *- The integrated S0 accesses manage synchronisation by bit M frame S.*
- The AXS cabinet delivers 48V remotely over an S0 link.
- Factory configuration of the EXT1S12 card: remote power supply is enabled on interfaces 2 and 3, and disabled on interfaces 0 and 1.

- Power supply is via a backplane connector. The EXT1-S12 card receives the following over this specific connector:
  - +5 V and +3.3 V power supply voltages used for its internal circuit operations
  - a - 48 V power supply voltage for analogue and digital sets,
  - a 70V AC power supply voltage for the ringing current of analogue sets.

Daughter cards

- The EXT1-S12 card can receive an ADPCM16V daughter card which offers the 4-channel base station function on the ISDN ports integrated into the card (S/T0 to S/T3). See the description of the ADPCM16V daughter card in Section 4.13.2.2.

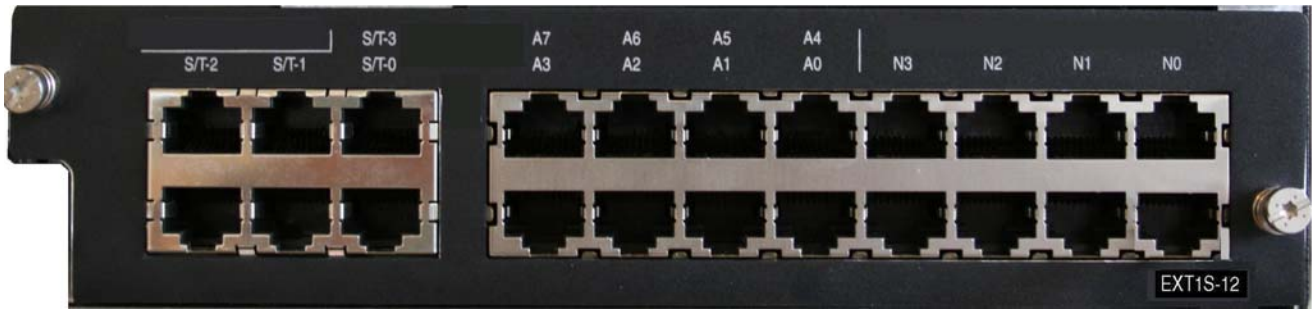
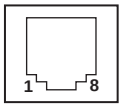
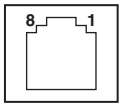
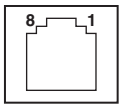


Figure 4.27 *OVERVIEW OF THE EXT1-S12 CARD*

4.9.2 Physical description

The EXT1-S12 card is fitted on the front panel of RJ45 sockets for the equipment interfaces

4.9.2.1 Connectors

NAME	Function/characteristic	contacts
J5	48-pin connector for LVDS link with the processor card	
J6	48-pin connector for power supply, and clock and interruption signals.	
S/T0, S/T1, S/T2, S/T3 (1) 	RJ45 connectors: T0/S0 access. **Note:** *Connecting S0 peripherals (S sets or DECT base stations) requires a twisted cable or S0/T0 adaptor.*	• Pins 1 and 2: NC • Pin 3: EDX • Pin 4: RDX • Pin 5: NRDX • Pin 6: NEDX • Pins 7 and 8: NC
A0 to A7 (1) 	RJ45 connectors: used to connect 8 analogue sets.	• Pin 4: LAX+ • Pin 5: LAX- • Pins 1, 2, 3, 6, 7, and 8: NC
N0 to N3 (1) 	RJ45 connectors: used to connect 4 digital sets.	• Pin 4: LNX+ • Pin 5: LNX- • Pins 1, 2, 3, 6, 7, and 8: NC

(1) Connector front view.

(2) Tableau 4.16 and Figure 4.20 give the details relating to the command relays.

TABLEAU 4.25 DESCRIPTION OF EXT1-S12 CARD CONNECTORS

4.9.2.2 Indicators

The EXT1-S12 card does not have any indicators on the front panel.

4.9.3 Hardware and software configuration

The EXT1-S12 card has 4 jumpers for configuring remote power supply of the S/T0 to S/T3 accesses (one jumper block for each access). These jumpers are fitted on connectors J29_xx and J30_xx located on the front panel of the EXT1-S12 card (J29_30 for S/T0 access, J29_31 and J30_31 for S/T1 access).

The four accesses are placed vertically on the card. The one at the bottom is the S/T0 access and the one at the top the S/T3 access.

Depending on the position of the jumpers, the S/T0 to S/T3 accesses will be configured as follows:

- No remote power supply.
- Remote supply of - 48 V.

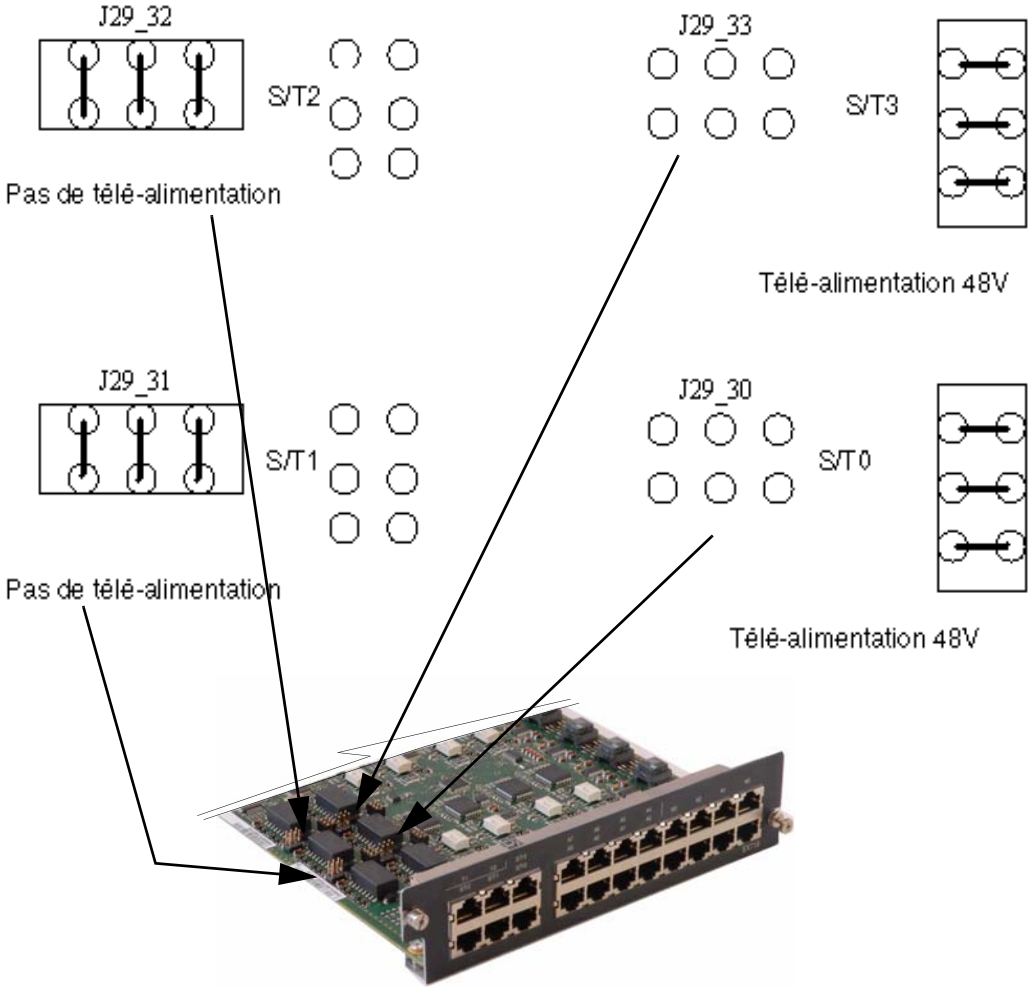


Figure 4.28 *CONFIGURING REMOTE POWER SUPPLY OF S/T0 TO S/T3 ACCESSES*

4.9.3.1 Installation and wiring

The A0 to A7 interfaces of the EXT1-S12 card have installation details identical to those of

the interfaces of the LA16X card (see Section 4.14.1.5).

The N0 to N3 interfaces of the EXT1-S12 card have installation details identical to those of the interfaces of the LN16X card (see Section 4.14.5.5).

The S/T0 to S/T3 interfaces of the EXT1-S12 card have installation details identical to those of the interfaces of the LD4 card for T accesses (see Section 4.13.2.1) but are different for S accesses.

Caution: *The S/T accesses of the EXT1-S12 card are wired in T. To connect S peripherals (S sets or DECT base stations), a twisted cable or S0/T0 adaptor (see Figure 4.26) is, therefore, required.*

Wiring DECT base stations

Each base station is connected to an ISDN S0 (BRI) interface of an EXT1-S12 card, and uses two pairs: 1 transmit pair and 1 reception pair (refer to document [6] (see Section1.3) for more information).

A twisted cable or S0/T0 adaptor is required to connect DECT base stations.

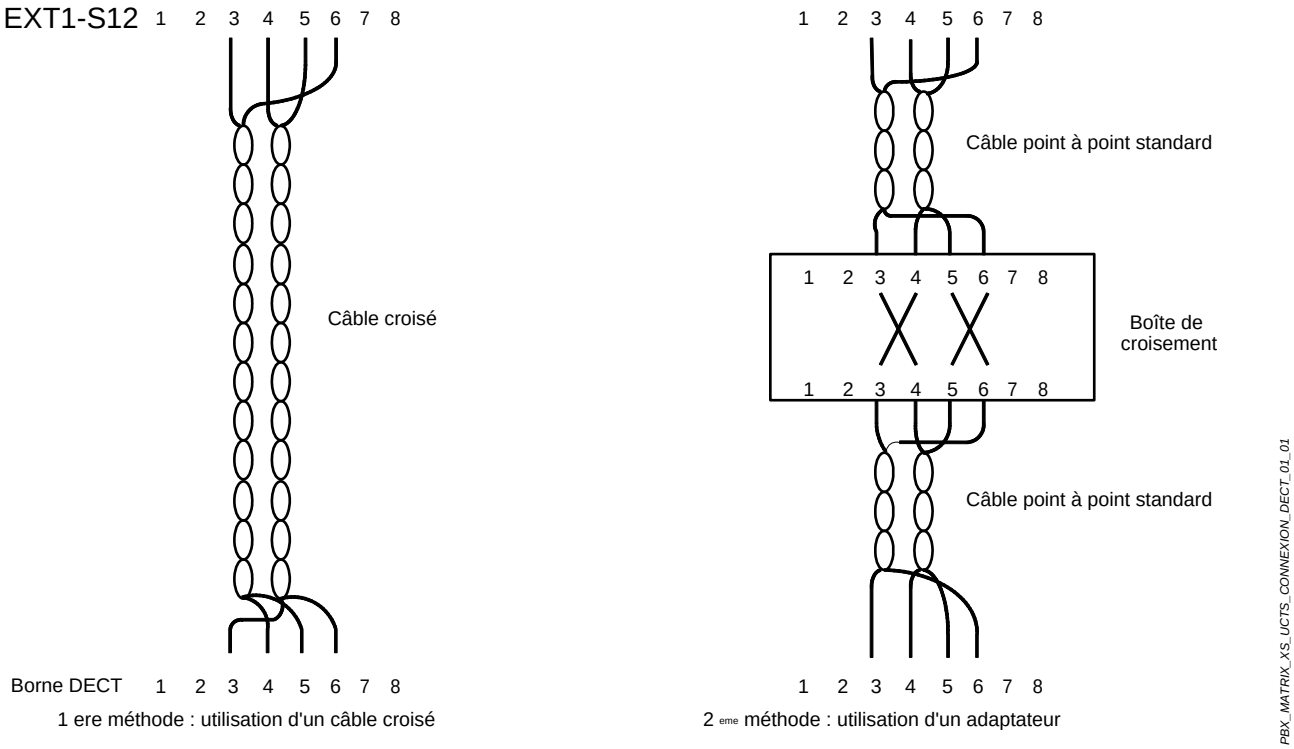

EXT1-S12
1 2 3 4 5 6 7 8
Câble croisé
Borne DECT
1 2 3 4 5 6 7 8
1 ere méthode : utilisation d'un câble croisé
1 2 3 4 5 6 7 8
Câble point à point standard
1 2 3 4 5 6 7 8
Boîte de croisement
1 2 3 4 5 6 7 8
Câble point à point standard
1 2 3 4 5 6 7 8
2 eme méthode : utilisation d'un adaptateur
PBX_MATRIX_XS_UCTS_CONNEXION_DECT_01_01

Figure 4.29 *CONNECTING A DECT BASE STATION TO AN S0 INTERFACE OF THE EXT1-S12 CARD*

EXT1-S12 **card RJ45 connector**	**Base station RJ45 connector**
Pin 6 (NED1)	Pin 5
Pin 3 (ED1)	Pin 4
Pin 5 (NRD1)	Pin 6
Pin 4 (RD1)	Pin 3

TABLEAU 4.26 S0 INTERFACE LINK WITH DECT BASE STATION (TWISTED CABLE)

4.10 EXT1-S6 card

4.10.1 Functional description

The EXT1-S62 card offers the following functions:

- additional interfaces for telephone equipment:
  - 4 analogue set interfaces (type LA16X),
  - 2 digital set interfaces (type LN16X),
  - 2 configurable ISDN interfaces:
    - In T0 for connection to the network
    - Or in S0 for connecting terminals or DECT base stations (with 2 channels and 4 channels if fitted with an ADPCM16V daughter card).

Note: *- The integrated S0 accesses manage synchronisation by bit M frame S.*
- The AXS cabinet delivers 48V remotely over an S0 link.
- Factory configuration of the EXT1-S6 card: remote power supply is enabled on interfaces 2 and 3, and disabled on interfaces 0 and 1.

- Power supply is via a backplane connector. The EXT1-S6 card receives the following over this specific connector:
  - +5 V and +3.3 V power supply voltages used for its internal circuit operations
  - a - 48 V power supply voltage for analogue and digital sets,
  - a 70V AC power supply voltage for the ringing current of analogue sets.

Daughter cards

- The EXT1-S6 card can receive an ADPCM16V daughter card which offers the 4-channel base station function on the ISDN ports integrated into the card (S/T0 to S/T1). See the description of the ADPCM16V daughter card in Section 4.13.2.2.

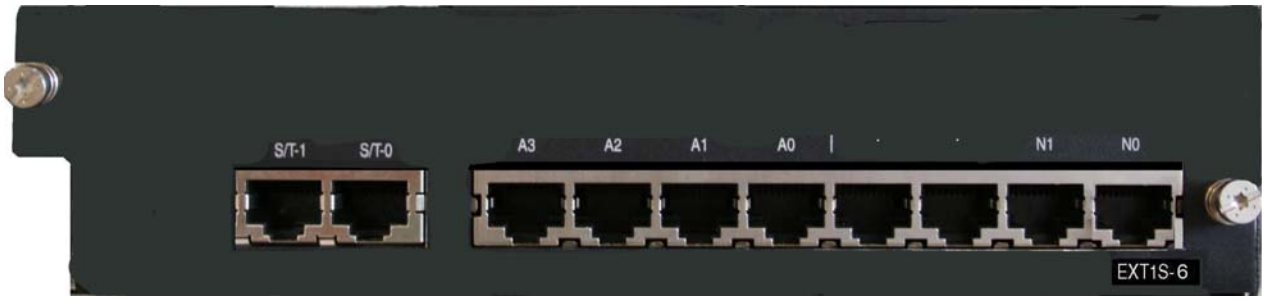
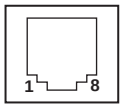
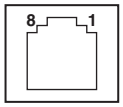
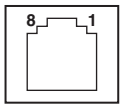


Figure 4.30 *OVERVIEW OF THE EXT1-S6 CARD*

4.10.2 Physical description

The EXT1-S6 card is fitted on the front panel of RJ45 sockets for the equipment interfaces

4.10.2.1 Connectors

NAME	Function/characteristic	contacts
J5	48-pin connector for LVDS link with the processor card	
J6	48-pin connector for power supply, and clock and interruption signals.	
S/T0, S/T1 (1) 	RJ45 connectors: T0/S0 access. **Note:** *Connecting S0 peripherals (S sets or DECT base stations) requires a twisted cable or S0/T0 adaptor.*	• Pins 1 and 2: NC • Pin 3: EDX • Pin 4: RDX • Pin 5: NRDX • Pin 6: NEDX • Pins 7 and 8: NC
A0 to A3 (1) 	RJ45 connectors: used to connect 4 analogue sets.	• Pin 4: LAX+ • Pin 5: LAX- • Pins 1, 2, 3, 6, 7, and 8: NC
N0 to N1 (1) 	RJ45 connectors: used to connect 2 digital sets.	• Pin 4: LNX+ • Pin 5: LNX- • Pins 1, 2, 3, 6, 7, and 8: NC

(1) Connector front view.

(2) Tableau 4.16 and Figure 4.20 give the details relating to the command relays.

TABLEAU 4.27 DESCRIPTION OF EXT1-S6 CARD CONNECTORS

4.10.2.2 Indicators

The EXT1-S6 card does not have any indicators on the front panel.

4.10.3 Hardware and software configuration

The EXT1-S6 card has 2 jumpers for configuring remote power supply of the S/T0 to S/T1 accesses (one jumper block for each access). These jumpers are fitted on connectors J29_xx and J30_xx located on the front panel of the EXT1-S16 card (J29_30 for S/T0 access, J29_31 and J30_31 for S/T1 access).

Depending on the position of the jumpers, the S/T0 to S/T1 accesses will be configured as follows:

- No remote power supply.
- Remote supply of - 48 V.

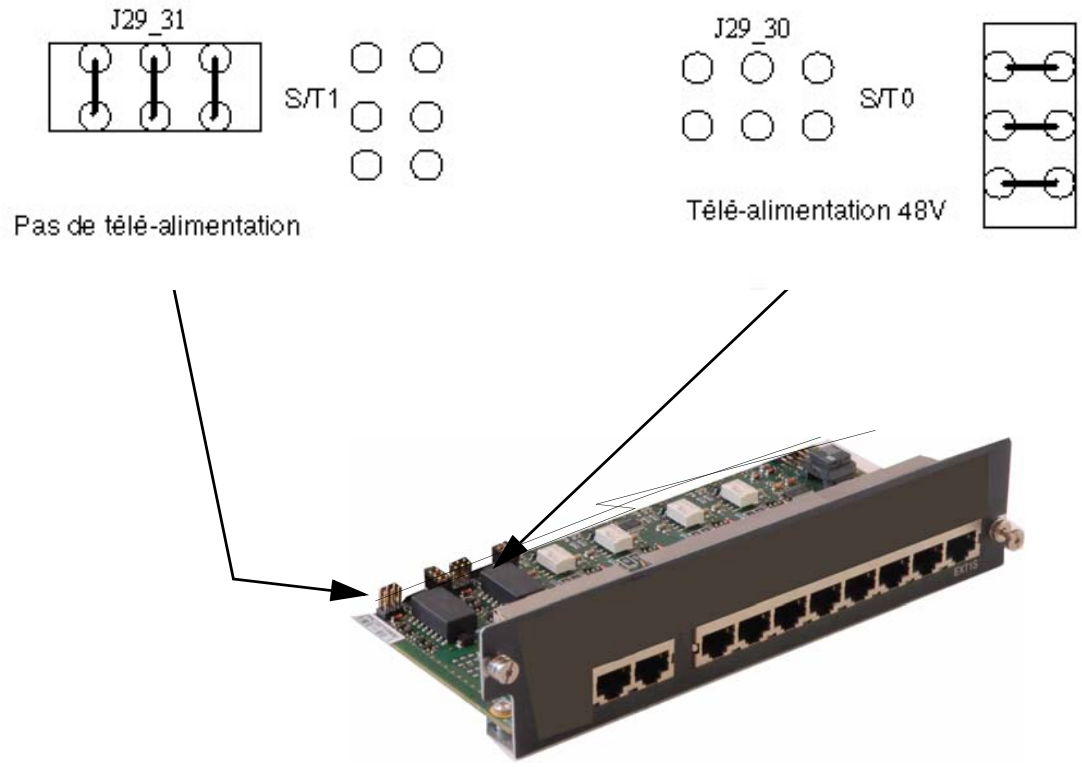


Figure 4.31 *CONFIGURING REMOTE POWER SUPPLY OF S/T0 TO S/T3 ACCESSES*

4.10.3.1 Installation and wiring

The A0 to A3 interfaces of the EXT1-S6 card have installation details identical to those of the interfaces of the LA16X card (see Section 4.14.1.5).

The N0 to N1 interfaces of the EXT1-S6 card have installation details identical to those of the interfaces of the LN16X card (see Section 4.14.5.5).

The S/T0 to S/T3 interfaces of the EXT1-S6 card have installation details identical to those of the interfaces of the LD4 card for T accesses (see Section 4.13.2.1) but are different for S accesses.

Caution: *The S/T accesses of the EXT1-S6 card are wired in T. To connect S peripherals (S sets or DECT base stations), a twisted cable or S0/T0 adaptor (see Figure 4.26) is, therefore, required.*

Wiring DECT base stations

Each base station is connected to an ISDN S0 (BRI) interface of an EXT1-S6 card, and uses two pairs: 1 transmit pair and 1 reception pair (refer to document [6] (see Section1.3) for more information).

A twisted cable or S0/T0 adaptor is required to connect DECT base stations.

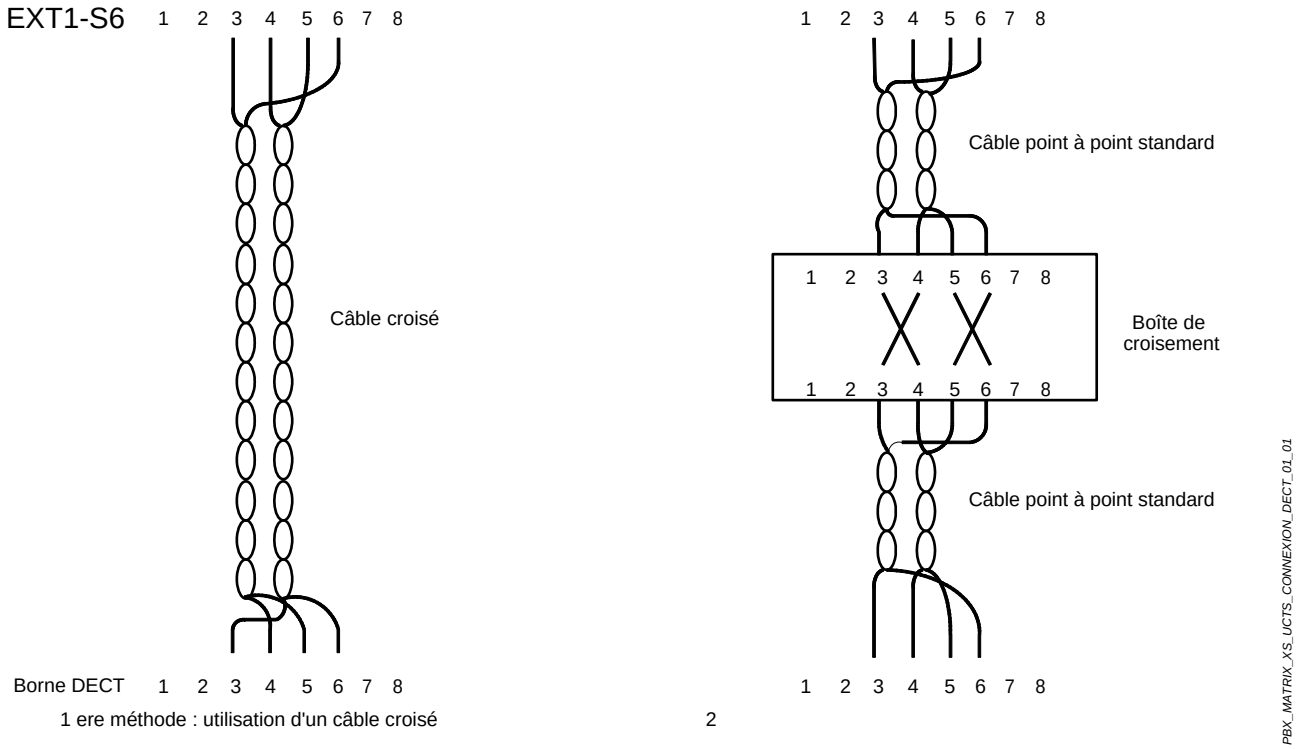

EXT1-S6
1 2 3 4 5 6 7 8
Câble croisé
Borne DECT
1 2 3 4 5 6 7 8
1 ere méthode : utilisation d'un câble croisé
1 2 3 4 5 6 7 8
Câble point à point standard
1 2 3 4 5 6 7 8
Boîte de croisement
1 2 3 4 5 6 7 8
Câble point à point standard
1 2 3 4 5 6 7 8
2
PBX_MATRIX_XS_UCTS_CONNEXION_DECT_01_01

Figure 4.32 *CONNECTING A DECT BASE STATION TO AN S0 INTERFACE OF THE EXT1-S6 CARD*

EXT1-S6 **card RJ45 connector**	**Base station RJ45 connector**
Pin 6 (NED1)	Pin 5
Pin 3 (ED1)	Pin 4
Pin 5 (NRD1)	Pin 6
Pin 4 (RD1)	Pin 3

TABLEAU 4.28 S0 INTERFACE LINK WITH DECT BASE STATION (TWISTED CABLE)

4.11 RUCV-L card

4.11.1 Functional description

The RUCV-L card is installed instead of the UCV-L card in the expansion cabinet.

Its basic function is to distribute and monitor the status of the line equipment bus and synchronous trunks at the positions of the expansion cards.

It has the following features:

- One EEPROM for identifying the card and its resources
- One reception module for the LVDS expansion bus transmitted by UCV-L
- One PCM conversion logical block
- One equipment bus (E/S part: equipment bus) and synchronous bus controller,
- One Reset unit for resetting the card and interfaces correctly
- One maintenance bus I 2 C used for montitoring, among others, the power supply block alarms
- Two expansion cabinet montoring LEDs.

It includes one command interface for 14 equipment cards and 7 trunks.

4.11.2 Physical description

4.11.2.1 Connectors

NAME	FUNCTION	CONTACTS
J1	192-pin female connector: for connecting the backplane of equipment cards.	
J2	48-pin female connector: for the LVDS expansion bus.	
J3	8-pin male HE14 Programming the flash memory containing the code to be loaded on FPGA.	

TABLEAU 4.29 DESCRIPTION OF RUCV-L CARD CONNECTORS

4.11.2.2 Indicators

INDICATOR	STATE	EXPLANATION
LINK (front panel)	flashing green not flashing	Correct clock received on the LVDS expansion bus No clock (UCV stopped or cable disconnected)
EQT. RUN (front panel)	flashing green	access to one of the expansion cards of the current cabinet

TABLEAU 4.30 DESCRIPTION OF RUCV-L CARD INDICATORS

4.11.3 Hardware and software configuration

This card does not require any hardware or software configuration.

4.11.4 Installation and wiring

Connecting an RUCV-L card to a UCV-L card requires a specific cable supplied with the expansion cabinet ("Y" cable, HG4784).

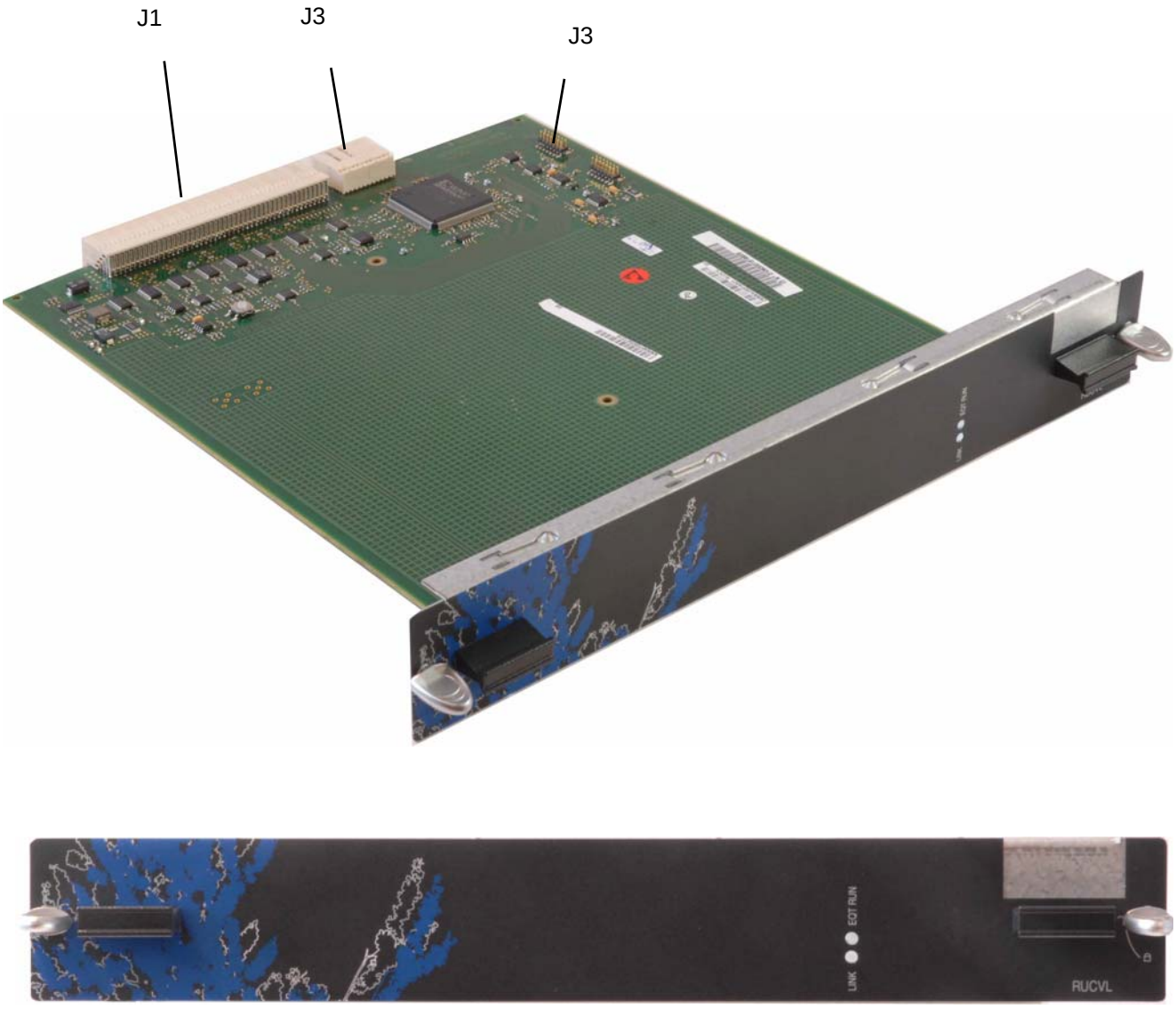


Figure 4.33 *OVERVIEW OF THE RUCV-L CARD*

4.12 RUCV-S card

4.12.1 Functional description

The RUCV-S card is installed instead of the UCV-S card in the expansion cabinet.

Its basic function is to distribute and monitor the status of the line equipment bus and synchronous trunks at the positions of the expansion cards.

It has the following features:

- One EEPROM for identifying the card and its resources
- One reception module for the expansion bus transmitted by UCV-S
- One PCM conversion logical block
- One equipment bus (E/S part: equipment bus) and synchronous bus controller,
- One Reset unit for resetting the card and interfaces correctly
- One maintenance bus I 2 C used for montitoring, among others, the power supply block alarms
- Two expansion cabinet montoring LEDs.

It includes one command interface for 14 equipment cards and 7 trunks.

4.12.2 Physical description

4.12.2.1 Connectors

NAME	FUNCTION	CONTACTS
J1	192-pin female connector: for connecting the backplane of equipment cards.	
J2	48-pin female connector: for the LVDS expansion bus.	
J3	8-pin male HE14 Programming the flash memory containing the code to be loaded on FPGA.	

TABLEAU 4.31 DESCRIPTION OF RUCV-S CARD CONNECTORS

4.12.2.2 Indicators

INDICATOR	STATE	EXPLANATION
LINK (front panel)	flashing green not flashing	Correct clock received on the LVDS expansion bus No clock (UCV stopped or cable disconnected)

EQT. RUN (front panel)	flashing green	Accessing one of the cabinet expansion cards

TABLEAU 4.32 DESCRIPTION OF RUCV-S CARD INDICATORS

4.12.3 Hardware and software configuration

This card does not require any hardware or software configuration.

4.12.4 Installation and wiring

Connecting an RUCV-S card to a UCV-S card requires a specific cable provided with the expansion cabinet (cable HT8212AA01).

Note: *The basic cabinet does not have any internal connector for the inter-cabinet wire. Therefore, the expansion ribbon (delivered with the expansion cabinet) must be connected to basic cabinet.*

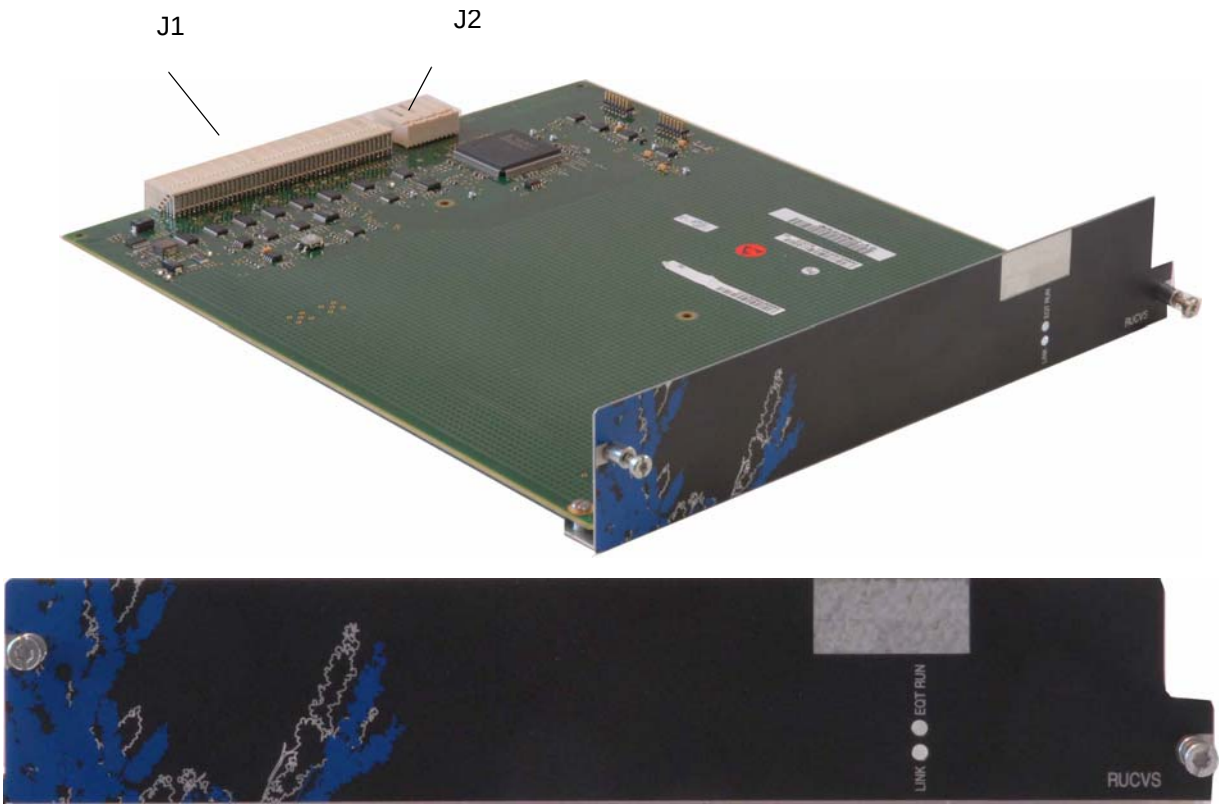


Figure 4.34 *OVERVIEW OF THE RUCV-S CARD*

4.13 Application cards (CLX)

4.13.1 LD4 card

4.13.1.1 Description

This S0/T0 ISDN interface card is used to connect to ISDN terminals, DECT base stations or an ISDN network.

The S0/T0 interface can be configured to supply:

- one connection at reference point S0 to a terminal,
- one connection at reference point T0 to the network.

These cards also handle packet-mode data transmission service on channel D between the network and a terminal.

4.13.1.2 Functional description

The LD4 card is a card connecting to the base rate interface of the ISDN network. It includes 4 line interfaces configurable individually in S0 or T0. There are two possible configurations:

- LD4 card without daughter card: used to connect the iPBX to the ISDN network or to ISDN terminals. It is also used to connect 2-channel DECT base stations.
- LD4 card fitted with one or two signal processing daughter cards: for connecting 4-channel DECT base stations to one to four of its interfaces (see the description of the daughter card in Section 4.13.2.2); the other interfaces can be connected to the ISDN network, ISDN terminals or 2-channel DECT base stations.

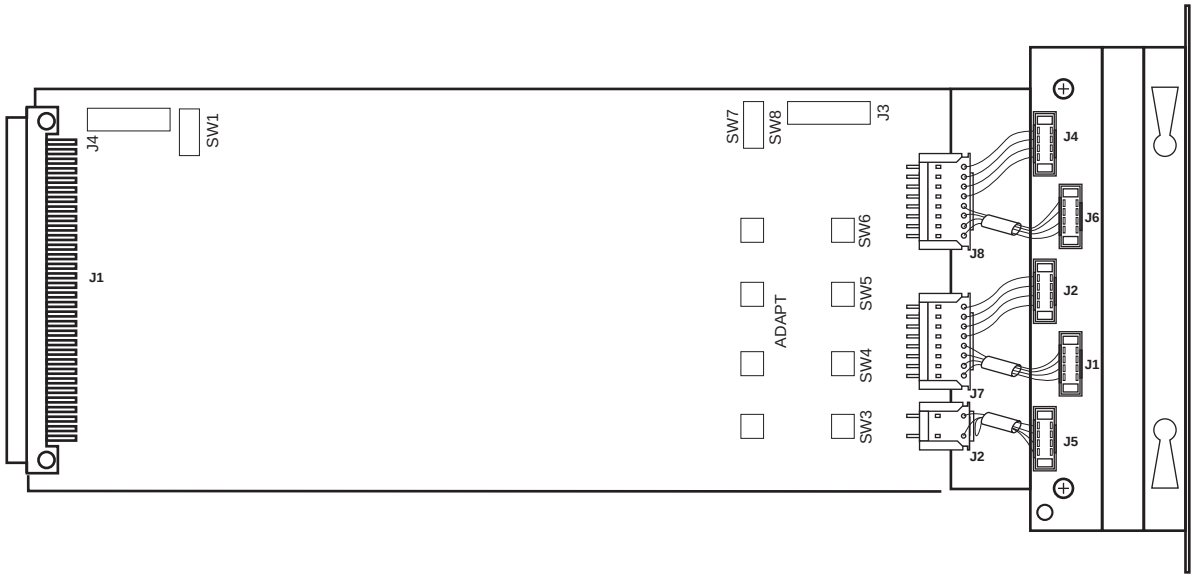
Fitted with one or two daughter cards, the LD4 card uses the TSs assigned to 2 slots, hence forbidding equipment sharing the same PCM in the associated slot (see configuration rules in section 3.5).

The S0 interface can supply remotely the terminal connected to it. This function is implemented through a dip-switch. The LD4 card can be configured to use:

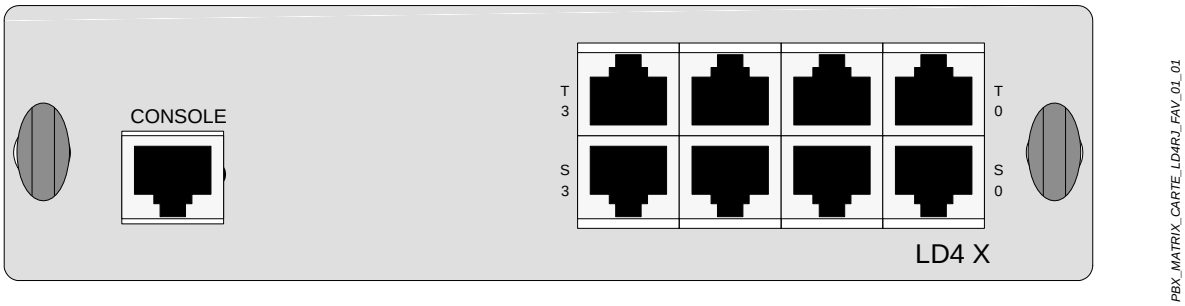
- The -48V trunk or
- On an AXL cabinet only, the 40V ISDN as remote power supply voltage of the S0 interfaces; the current is limited to 100 mA per interface.

-48 V is provided by the iPBX backplane, while the 40 V ISDN is connected via connector S3.

The card also receives the +5 V supply voltage on the backplane connector (J1), used for the operation of its internal circuits.



LD4 card



LD4 CARD FRONT PANEL

Figure 4.35 OVERVIEW OF THE LD4 CARD

4.13.1.3 Physical description

Connectors

NAME	FUNCTIONS/CHARACTERISTICS	CONTACTS
J1	96-pin connector: backplane connection.	
J4	HE14 connector -1 x 8 male pins, partially equipped: used for loading programmable components "On Site"	not used
J5 and J6	Two connectors AMP CMS 2 x 10 female pins: host the ADPCM4V daughter cards.	
J9	Male 3-pin connector partially equipped.	not used

NAME	FUNCTIONS/CHARACTERISTICS	CONTACTS
console	RJ45 -8 pin connectors: reserved for the manufacturer.	
S0 to S2	RJ45 -8 pin connectors: connection to S0 interface.	(1)
S3	RJ45 -8 pin connector: connection to S0 interface + ISDN 40 V remote supply voltage.	(1)
T0 to T2	RJ45 -8 pin connectors: connection to T0 interface.	(1)
T3	RJ45 -8 pin connector: connection to T0 interface + 40 V ISDN remote supply voltage(1).	(1)

TABLEAU 4.33 DESCRIPTION OF LD4 CARD CONNECTORS

(1) See the detail of the connections in Tableau 4.34 .

TABLEAU 4.34 DETAILS OF THE S0/T0 CONNECTIONS OF LD4 CARD

	LINE NO.			
Pin No.	T3	T2 (PRI)	T1	T0 (BRI)
1 2 3 4 5 6 7 8	M40 V ED3 RD3 NRD3 NED3 P40 V	 ED2 RD2 NRD2 NED2	 ED1 RD1 NRD1 NED1	 ED0 RD0 NRD0 NED0
Pin No.	S3	PRI (S2)	S1	S0
1 2 3 4 5 6 7 8	M40 V RD3 ED3 NED3 NRD3 P40 V	 RD2 ED2 NED2 NRD2	 RD1 ED1 NED1 NRD1	 RD0 ED0 NED0 NRD0

CONNECTORS

Indicators: The indicators are located on the card circuit and not on the front panel.

NAME	STATE	EXPLANATION
CR2 (red)	Flashing rapidly	Card in service

TABLEAU 4.35 PRESENTATION OF THE LD4 CARD INDICATORS

4.13.2 Hardware configuration

The **ADAPT** micro-switches are used to adapt lines (factory setting, leave set to ON).

The **CA2** microswitch (located on the copper side) is used to configure synchronisation (T0) and master or slave mode (S0).

For LD4 in T0

MICROSWITCH CA2.1	EXPLANATION
ON	Leave set to ON position. If the LD4 card is fitted in a synchronising slot, the ON position allows the iPBX to take the ISDN network clock as reference clock. In a non-synchronising slot, CA2.1 has no effect. Synchronising slots in an AXD and AXL cabinet are slots 1-00 to 1-05. In an AXS cabinet all positions are synchronising.
OFF	Do not set to the OFF position. In OFF position, the ISDN clock is not taken as reference, whatever the slots.

TABLEAU 4.36 CONFIGURATION OF THE CA2.1 MICROSWITCH ON THE LD4 CARD

For LD4 in S0 (for DECT BS)

MICROSWITCH CA2.2	EXPLANATION
M	LD4 master: **Position not authorised**.
E	Slave LD4: To be set to position E on all LD4 cards (LD4 card always slave).

TABLEAU 4.37 CONFIGURATION OF THE CA2.2 MICROSWITCH ON THE LD4 CARD

The **SW1** jumper must be left in position 1-2 (factory reserved).

The jumpers **SW3**, **SW4**, **SW5** and **SW6** are used to enable remote power supply on each interface when connecting a T0 interface:

- SW3: remote power supply interface 3
- SW4: remote power supply interface 2
- SW5: remote power supply interface 1
- SW6: remote power supply interface 0

The jumpers **SW7**, **SW8** are used to select the 40V or 48V remote power supply.

SW7 AND SW8	POSITIONS	FUNCTION
	1-2	Selects the 48 V power supply.
	2-3	Selects the 40 V power supply.

4.13.2.1 Installation and wiring

Caution: *Activating a card connected to an ISDN network requires special programming on Aastra Management Portal.*

The LD4 card cannot be hot-plugged in a working iPBX. The iPBX must be powered off before inserting the card.

This card must be connected with cable No. HG4731.

Connecting a T0 interface

One end of the connection cable must be fitted with an ISO 8877 compliant male RJ45 connector.The minimum diameter of the cables has to be 26AWG (0.4mm).

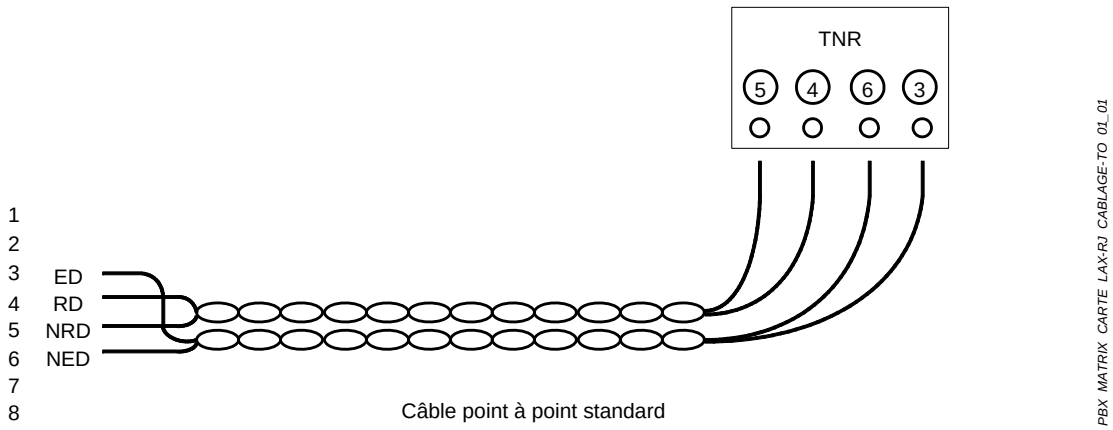


Figure 4.36 WIRING THE T0 INTERFACE OF AN LD4 CARD

Connecting an S0 interface

The S0 bus is a shielded two-pair cable. Depending on the bus length and topology, between one and eight female RJ45 connectors can be connected to it, for one ISDN/S0 (BRI) terminal.

Long bus (point to point)

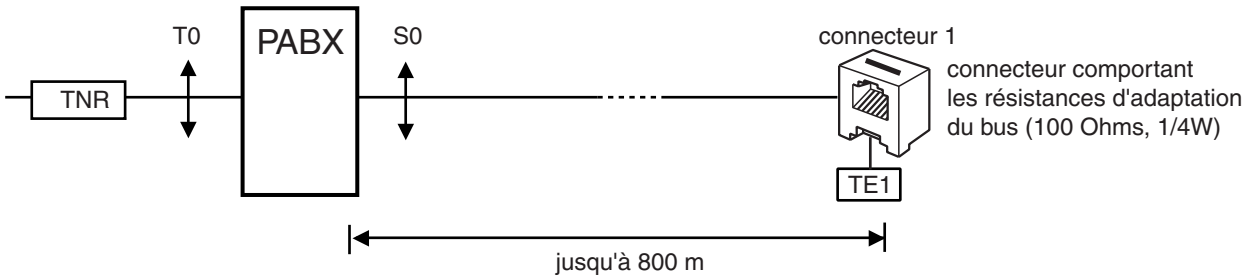


Figure 4.37 *WIRING AN S0 BUS*

Wiring DECT base stations

Caution: *Never invert the polarities of the clock and transmit/receive pairs.*

Each terminal is connected to the ISDN S0 (BRI) interface of an LD4 card, and uses 2 pairs: 1 transmit pair and 1 reception pair (refer to document [6] (see Section1.3) for more information).

If there are a DECT base station and an S0 terminal supplied with 40 V (other than the base station) on the same card, the base station will be powered with a 40 V (available only on an AXL cabinet).

Whatever the synchronisation mode, ground the shielding or unused pairs to the cabinet.

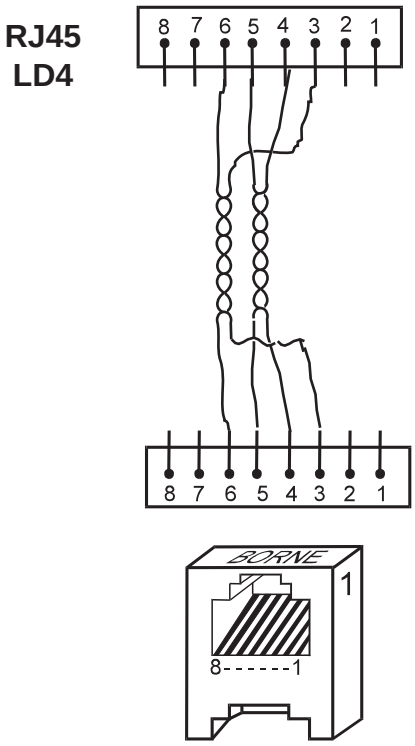


Figure 4.38 *CONNECTING A DECT BASE STATION TO AN LD4 CARD*

LD4 card RJ45 connector	Base station RJ45 connector
Pin 6 (NRD)	Pin 6
Pin 3 (RD)	Pin 3
Pin 5 (NED)	Pin 5
Pin 4 (ED)	Pin 4

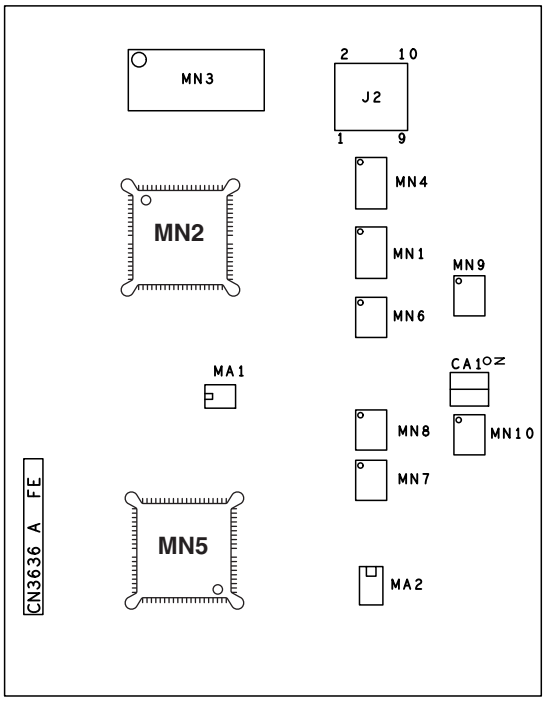
TABLEAU 4.38 S0 INTERFACE LINK WITH DECT BASE STATION

4.13.2.2 Description of the signal processing daughter card:

The card provides the 32 kbit/s ADPCM encoding/decoding function that enables multiple simultaneous calls on the same base station; it also provides echo damping and cancellation functions.

ISDN interface cards (LD4, LD4N, LD4X) and EXT1-S/EXT1-S12 cards (fitted with four ISDN ports), EXT1-S6 card (fitted with two ISDN ports) which by default have no ADPCM encoding/decoding function, can be fitted with a card to increase the number of channels per DECT base station: 4 channels per DECT base station when the card is available instead of 2 channels per base station without any card.

The card is installed on connectors J5 and J6 of the ISDN interface cards (LD4, LD4N and LD4X) as well as connectors J29 and J30 of EXT1-S, EXT1-S12 and EXT1-S6 cards.



4.13.3 LD4NX card

4.13.3.1 Description

This S0/T0 ISDN interface card is used to connect to ISDN terminals, DECT base stations or an ISDN network.

The S0/T0 interface can be configured to supply:

- one connection at reference point S0 to a terminal,
- one connection at reference point T0 to the network.

These cards also handle packet-mode data transmission service on channel D between the network and a terminal.

The LD4NX card works in LD4X mode when a jumper (J14) is removed, and allows the use of the following additional features:

- Since the card uses the dedicated trunk of its slot, there are no longer any restrictions on the location of the card.
- The card's hardware information can be read through the MMC (presence of an EEPROM on the card).
- It is possible to declare up to10 cards in an Aastra XL.
- It is possible to read the status of the card's remote power supply once the card is in service.

4.13.3.2 Functional description

The LD4NX card is a card connecting to the base rate interface of the ISDN network. It includes 4 line interfaces configurable individually in S0 or T0. There are 2 possible configurations:

- LD4NX card without daughter card: used to connect the iPBX to the ISDN network or to ISDN terminals. It is also used to connect 2-channel DECT base stations.
- LD4NX card fitted with a signal processing daughter card: used to connect 4-channel DECT base stations to one to four of its interfaces (see the description of the duaghter card in Section 4.13.2.2); the other interfaces can be connected to the ISDN network, ISDN terminals or 2-channel DECT base stations.

Fitted with a daughter card, the LD4NX card (LD4N mode) uses the TSs assigned to 2 slots, hence forbidding equipment sharing the same PCM in the associated slot (see configuration rules in section 3.5). This is not the case for the LD4NX card (LD4X mode) which uses the dedicated trunk of its slot. There are no longer any conflicts between the cards. The restrictions concerning the location of the card in LD4N mode do not apply to the card in LD4X mode.

The S0 interface can supply remotely the terminal connected to it. This function is implemented through a dip-switch. The LD4NX card can be configured to use:

- The -48V trunk or
- On an AXL cabinet only, the 40V ISDN as remote power supply voltage of the S0 interfaces; the current is limited to 100 mA per interface.

-48 V is supplied by the iPBX backplane.

ISDN 40 V is supplied only by the AXL iPBX backplane and by external remote power supply cards (not provided on AXS).

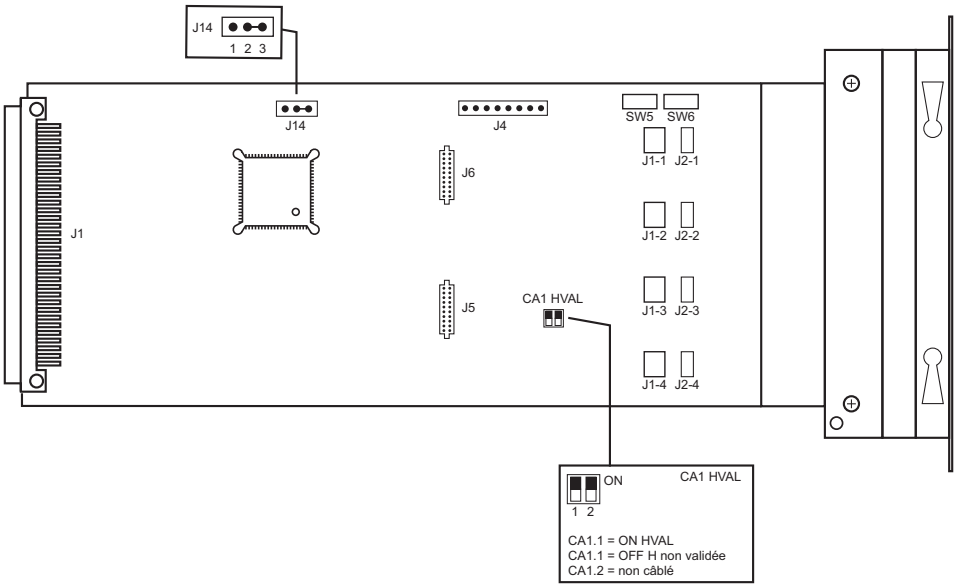
The card also receives the +5 V supply voltage on the backplane connector (J1), used for the operation of its internal circuits.

Management of M bit channel by channel

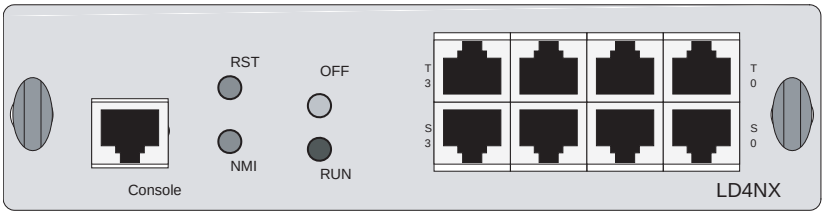
For software releases before 3.2, the 4 equipment interfaces on the card generate the M bit in the S frame every 800 ms (factory setting). This setting can be changed to 5 ms for particular ISDN applications (video conference, router) if the set of resistors on the card (R91 and R67) are modified.

From release 3.2, operation at 5 or 800 ms is determined automatically. The card has its accesses initialized channel by channel, depending on their configuration:

- DECT M bit S frame: the interface generates the M bit in the S frame to the base station every 800 ms.
- DECT master base station, DECT slave base station or non-DECT S0 terminal: the interface generates the M bit in the S frame to the base station every 5 ms. The slave base station does not use this synchronization; it uses only the 800ms clock transmitted by the master base station via the third pair.



LD4NX CARD

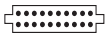


LD4NX CARD FRONT PANEL

Figure 4.39 *OVERVIEW OF THE LD4NX CARD*

4.13.3.3 Physical description

Connectors

NAME	FUNCTIONS/CHARACTERISTICS	CONTACTS
J1	96-pin connector: backplane connection.	
J4	HE14 connector - 1 x 8 male pins: used for loading programmable components "On Site" (reserved for manufacturer).	not used
J5 and J6 	Two connectors AMP CMS 2 x 10 female pins: hosts an ADPCM16V daughter card. Caution: the ADPCM8V daughter card is not managed by the LD4N/LD4X card.	
console	RJ45 -8 pin connectors: debug console, reserved for manufacturer.	
S0 to S3	RJ45 -8 pin connectors: connection to S0 interface.	(1)
T0 to T3	RJ45 -8 pin connectors: connection to T0 interface.	(1)

(1) See the details of the connections in Tableau 4.40 .

TABLEAU 4.39 DESCRIPTION OF LD4NX CARD CONNECTORS

	LINE NO.			
Pin No.	T3	T2 (PRI)	T1	T0 (BRI)
1 2 3 4 5 6 7 8	 ED3 RD3 NRD3 NED3	 ED2 RD2 NRD2 NED2	 ED1 RD1 NRD1 NED1	 ED0 RD0 NRD0 NED0
Pin No.	S3	PRI (S2)	S1	S0
1 2 3 4 5 6 7 8	 RD3 ED3 NED3 NRD3	 RD2 ED2 NED2 NRD2	 RD1 ED1 NED1 NRD1	 RD0 ED0 NED0 NRD0

Caution: *The ISDN 40V voltage is supplied by the AXL iPBX backplane.*

TABLEAU 4.40 DETAILS OF THE S0/T0 CONNECTIONS OF LD4NX CARD CONNECTORS

Indicators

NAME	STATE	EXPLANATION
RUN (green)	Flashing rapidly	Card in service
OFF (orange)	On	Card can be removed while powered up

TABLEAU 4.41 PRESENTATION OF LD4NX CARD INDICATORS

Note: *Disable the card to hot unplug it.*

Pushbuttons

The front panel includes:

- an "RST" push-button used to reset the card
- a "NMI" pushbutton used only at the factory.

4.13.3.4 Hardware configuration

- Micro-switch **CA1** (HVAL) is used to configure synchronisation (T0).

MICRO-SWITCH CA1 (HVAL)	EXPLANATION
ON	Leave set to ON position. If the LD4NX card is fitted in a synchronising slot, the ON position allows the iPBX to take the ISDN network clock as reference clock. In a non-synchronising slot, CA1 has no effect. Synchronising slots in an AXD or AXL cabinet are slots 1-00 to 1-05. In an AXS cabinet all positions are synchronising.
OFF	Do not set to the OFF position. In OFF position, the ISDN clock is not taken as reference, whatever the slots.

TABLEAU 4.42 CONFIGURATION OF THE MICROSWITCH CA1 (HVAL) ON THE LD4NX CARD

- Unlike LD4 cards, the LD4NX card does not have any Master/Slave microswitch for DECT synchronisation. Configuration is performed via MMC (see the operating manuals).
- Jumpers **J1_1, J1_2, J1_3 and J1_4** are used to enable the remote power supply (see SW5 and SW6) of each interface where an S0 interface is connected:

  Caution: *In T0, remove the jumpers (conflict between the 48V supplied by the system and the 40V supplied by the public exchange).*

  - J1_1: remote power supply interface 0
  - J1_2: remote power supply interface 1
  - J1_3: remote power supply interface 2
  - J1_4: remote power supply interface 3

  Note: *J2_1, J2_2, J2_3 and J2_4 are storage positions for jumpers.*
- Jumper J14 is used to select the LD4NX card's operating mode:
  - leave the jumper in factory position 2-3 for an LD4N configuration.
  - Place the jumper on 1-2 or remove the jumper for an LD4X configuration allowing the use of additional functions.
- A jumper placed on **SW5** or **SW6** is used to select the 40V or 48V remote power supply.
  - A jumper placed on SW5 (factory position) is used to select the 48V power supply.
  - A jumper placed on SW6 is used to select the 40 V power supply (on AXL only).

Note: *The LD4NX card has no microswitch for downloading the flash memory with a BOF3 type tool (automatic detection).*

4.13.3.5 Installation and wiring

Caution: *Activating a card connected to an ISDN network requires special programming on Aastra Management Portal.*

The LD4NX card can be hot-plugged in/removed from an AXL iPBX, AXS iPBX or AXS12 iPBX in normal operation.

This card must be connected with cable No. HG4731.

Connecting a T0 interface

One end of the connection cable must be fitted with an ISO 8877 compliant male RJ45 connector.

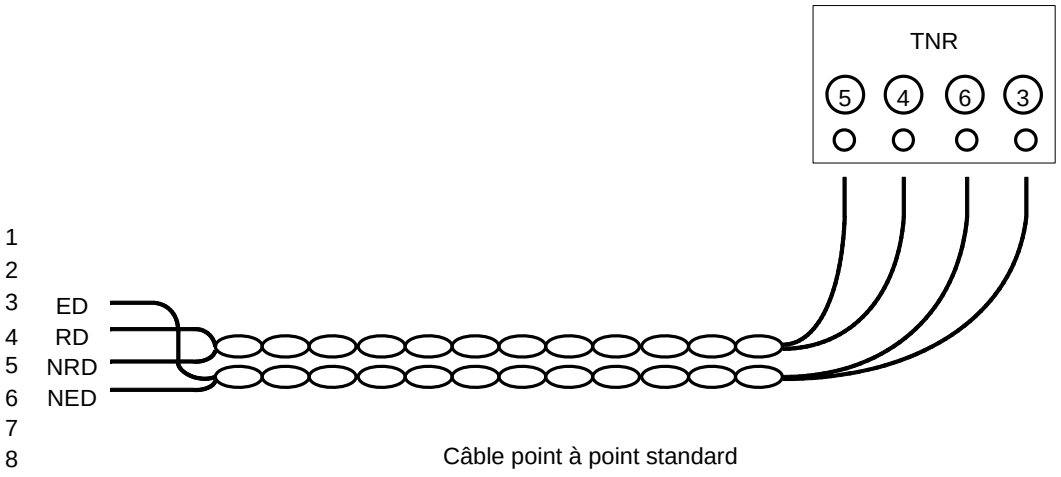


Figure 4.40 WIRING THE T0 INTERFACE OF AN LD4NX CARD

Connecting an S0 interface

The S0 bus is a shielded two-pair cable. Depending on the bus length and topology, between one and eight female RJ45 connectors can be connected to it, for one ISDN/S0 (BRI) terminal.

Long bus (point to point)

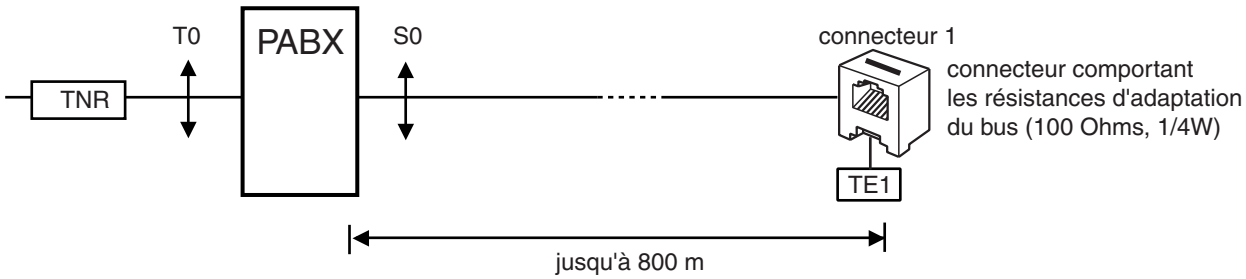


Figure 4.41 *WIRING AN S0 BUS*

Wiring DECT base stations

Caution: *Never invert the polarities of the clock and transmit/receive pairs.*

Each terminal is connected to the ISDN S0 (BRI) interface of an LD4NX card, and uses 2 pairs: 1 transmit pair and 1 reception pair (refer to document [6] (see Section1.3) for more information).

If there are a DECT base station and an S0 terminal supplied with 40 V (other than the base station) on the same card, the base station will be powered with a 40 V (available only on an AXL cabinet).

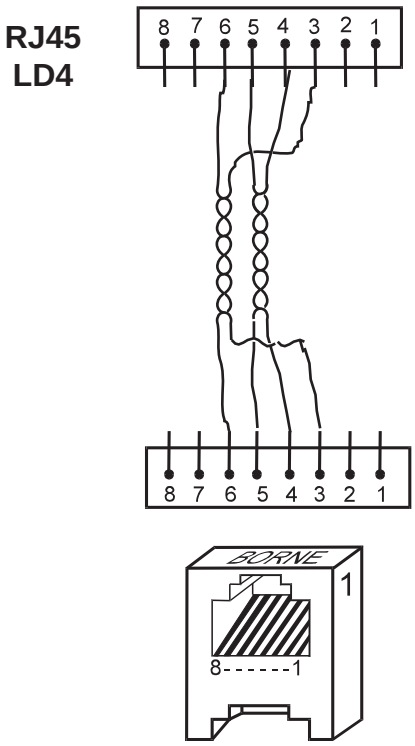


Figure 4.42 *CONNECTING A DECT BASE STATION TO AN LD4NX CARD*

LD4N card RJ45 connector	Base station RJ45 connector
Pin 6 (NRD)	Pin 6
Pin 3 (RD)	Pin 3
Pin 5 (NED)	Pin 5
Pin 4 (ED)	Pin 4

TABLEAU 4.43

TABLEAU 4.44 S0 INTERFACE LINK WITH DECT BASE STATION

4.13.4 LT2 card

4.13.4.1 Description

The LT2 card is a card providing access to the digital network. It provides connection:

- either to the primary rate interface of a European ISDN network (E1, 32 TSs) or a US type ISDN network (T1, 24 TSs),
- or to PCM digital links channel by channel, which can be used to provide tie line links with another private installation.

The S2/T2 interface can be configured to supply:

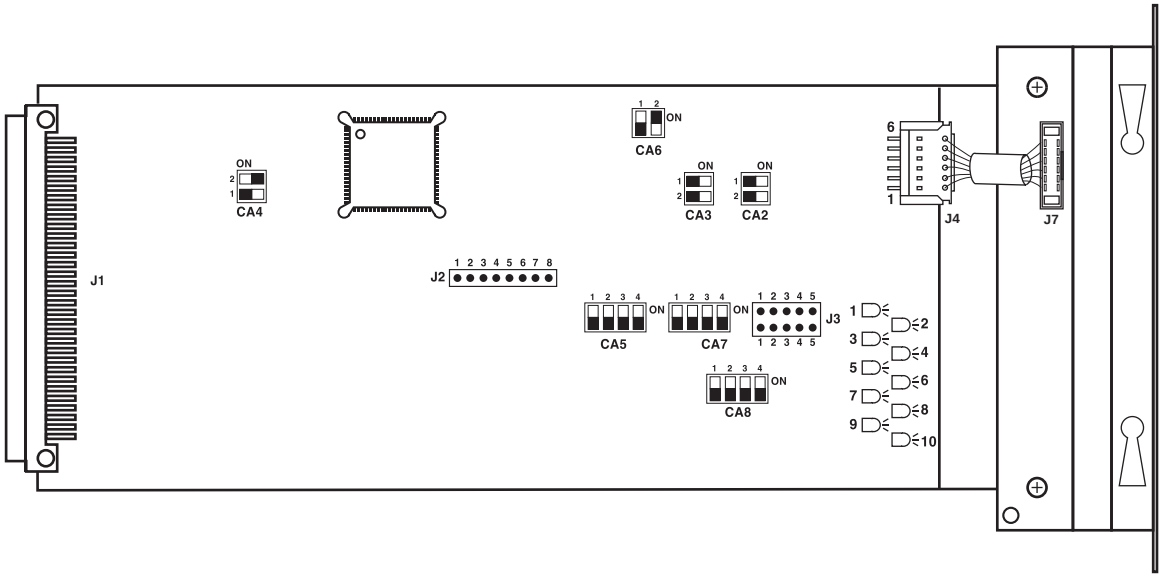
- one connection at reference point S2 to a terminal,
- one connection at reference point T2 to the network

These cards also handle packet-mode data transmission service on channel D between the network and a terminal.

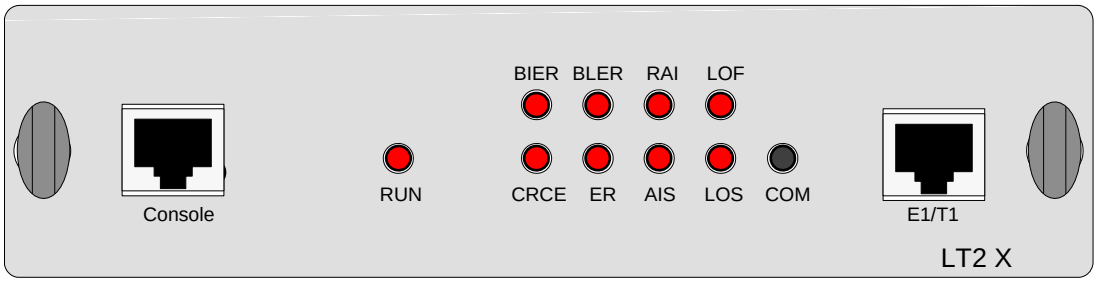
4.13.4.2 Functional description (see Figure 4.35)

The LT2 card provides the following functions:

- interface with one ISDN primary rate interface consisting essentially in:
  - aligning frames between the internal PCM link TSs and B channels (30 or 23 according to the type: E1 or T1) at 64 kbit/s of a primary ISDN link
  - inserting and extracting call status signals over the D channel of the ISDN link,
- PCM line interface (up to 32 channels) consisting mainly of:
  - aligning frames between the internal PCM links and the external PCM links,
  - inserting and extracting call status signals, PCM channel by PCM channel,
- management of indicators showing the status of frames and calls
- Power supply: the LT2 card also receives on the backplane connector (J1) the +5 V supply voltage, used for the operation of its internal circuits.



LT2 CARD



LT2 CARD FRONT PANEL

PBX_MATRIX_CARTE_LT2X_FAV_01_01

Figure 4.43 OVERVIEW OF THE LT2 CARD

4.13.4.3 Physical description (see Figure 4.37)

Connectors

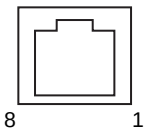
NAME	FUNCTION/CHARACTERISTIC	CONTACTS
J1	96-pin connector: backplane connection.	
J2 and J3	Not used	
E1/T1)  	ISDN or PCM line connection (transmit and receive pair)	RJ45 -8pin connector: Pins 1 and 2: to transmit pair (TNL) 1 : EMICP 2 : EMICN Pins 4 and 5: to receive pair (TNL) 4 : RMICP 5 : RMICN Pins 3 and 6: NTPIN, TPIN Pins 7 and 8: NTPOUT, TPOUT
console	RJ45 connector: reserved for the manufacturer.	

TABLEAU 4.45 DESCRIPTION OF LT2 CARD CONNECTORS

Indicators

The indicators described in the following table indicate the operating status of the calls and frames:

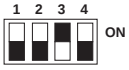
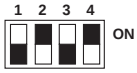
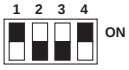
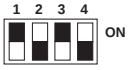
INDICATOR	STATE	EXPLANATION
RUN (yellow)	Flashing rapidly	Card being used
COM (green)	Off On steady Flashing	Call status: No signalling over channel D and no ongoing call At least one ongoing call Presence of signalling on channel D but no ongoing call (level 2 established)
Status of the frames:		
LOS (red)	On	**L**oss **O**f Synchronisation
LOF (red)	On	**L**oss **O**f **F**rame
AIS (red)	On	**A**larm **I**ndication **S**ignal
RAI (red)	On	**R**emote **A**larm **I**ndication (sent by the remote unit to indicate a local alarm)
ER (red)	On	**M**ulti-**f**rame **a**lignment loss
BLER (red)	On	**BL**ock **ER**ror (no **incoming** signal)
CRCE (red)	On	Frame errors detected for over 50 ms
BIER (red)	On	Wrong E bit detected for over 50 ms

TABLEAU 4.46 PRESENTATION OF LT2 CARD INDICATORS

4.13.4.4 *Hardware configuration*

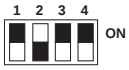
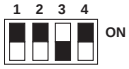
The LT2 card has several configuration switches, described in the following tables.

The **CA8** microswitch configures the operating mode, i.e. ISDN (T2/S2) or PCM.

CA8.1	CA8.2	CA8.3	CA8.4	CA8 SWITCH	PCM TYPE
OFF	OFF	OFF	OFF		LT2 card used in T2-S2 mode at 2 Mbps* (factory setting)
OFF	OFF	OFF	ON		PCM PRI (SF) 0 dB ISDN T1 at 1.544 Mbps (export)
OFF	OFF	ON	OFF		PCM PRI (SF) 7.5 dB ISDN T1 at 1.544 Mbps (export)
OFF	OFF	ON	ON		PCM PRI (SF) 15 dB ISDN T1 at 1.544 Mbps (export)
OFF	ON	OFF	OFF		Extended PCM PRI (ESF) 0 dB ISDN T1 at 1,544 Mbps (export)
OFF	ON	OFF	ON		Extended PCM PRI (ESF) 7.5 dB ISDN T1 at 1.544 Mbps (export)
OFF	ON	ON	OFF		Extended PCM PRI (ESF) 15 dB ISDN T1 at 1.544 Mbps (export)
OFF	ON	ON	ON		PCM (SF) 0 dB PCM T1 at 1.544 Mbps (export)
ON	OFF	OFF	OFF		PCM (SF) 7.5 dB PCM T1 at 1.544 Mbps (export)
ON	OFF	OFF	ON		PCM (SF) 15 dB PCM T1 at 1.544 Mbps (export)
ON	OFF	ON	OFF		Extended PCM (ESF) 0 dB PCM T1 at 1.544 Mbps (export)

* ■ Represents the microswitch.

TABLEAU 4.47 CONFIGURATION OF MICROSWITCH CA8 ON THE LT2 CARD (1/2)

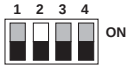
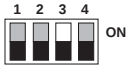
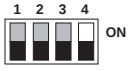
CA8.1	CA8.2	CA8.3	CA8.4	CA8 SWITCH	PCM TYPE
ON	OFF	ON	ON		Extended PCM (ESF) 7.5 dB PCM T1 at 1.544 Mbps (export)
ON	ON	OFF	OFF		Extended PCM (ESF) 15 dB PCM T1 at 1.544 Mbps (export)
ON	ON	OFF	ON		PCM E2 (32TS) 2 Mbps
ON	ON	ON	OFF		T2.E1 ISDN T2/S2 2 Mbps 16TS
ON	ON	ON	ON		not used

* The use of T2 or S2 is validated from Aastra Management Portal.

* ■ Represents the microswitch.

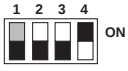
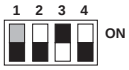
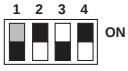
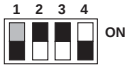
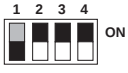
TABLEAU 4.47 Configuration of microswitch CA8 on the LT2 card (2/2)

Microswitches **CA5** and **CA7** are used to configure the line coding, remote alarms, and distances.

CA5.1	CA5.2	CA5.3	CA5.4	CA5 SWITCH	PCM TYPE
OFF					Line coding = B8ZS (Binary 8 zero suppression)
ON					Line coding = AMI (Alternate Mark Inversion)
	OFF				Remote alarm = type A
	ON				Remote alarm = type B
		OFF			Reception level = 6 dB (factory setting)
		ON			Reception level = 18 dB
			OFF		Synchronisation with the PCM clock possible
			ON		Synchronisation with the PCM clock not possible

* ■ Represents the microswitch.

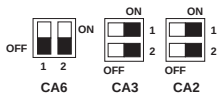
TABLEAU 4.48 CONFIGURATION OF THE CA5 MICROSWITCH ON THE LT2 CARD

CA7.1	CA7.2	CA7.3	CA7.4	CA7 SWITCH	PCM TYPE
OFF					24 TS PCM in ANSI T1 mode (factory setting)
ON					24 TS PCM in CCITT mode
	OFF	OFF	OFF		Rated transmission level (factory setting)
	OFF	OFF	ON		Line length = 0-35 m (0-3,505.20 cm)
	OFF	ON	OFF		Line length = 25-65 m (82-6,492.24 cm)
	OFF	ON	ON		Line length = 55-95 m (180-312 ft)
	ON	OFF	OFF		Line length = 115-155 m (377-15,514.32 cm)
	ON	OFF	ON		Line length = 145-185 m (476-607 ft)
	ON	ON	OFF		Line length = 175-210 m (574-21,000.72 cm)
	ON	ON	ON		Line length = -18 db

* ■ Represents the microswitch.

TABLEAU 4.49 CONFIGURATION OF THE CA7 MICROSWITCH ON THE LT2 CARD

Microswitches **CA6**, **CA3** and **CA2** are used to configure line impedance.

CA6.1	CA6.2	CA3.1	CA3.2	CA2.1	CA2.2	SWITCH	LINE IMPEDANCE
OFF	OFF	ON	ON	ON	ON		100 Ω (T1)
ON	OFF	ON	ON	OFF	OFF		75 Ω (E1)
OFF	ON	OFF	OFF	OFF	OFF		120 Ω (E1)

* ■ Represents the microswitch.

TABLEAU 4.50 CONFIGURATION OF THE CA6, CA3 AND CA2 MICROSWITCHES ON THE LT2 CARD

The **CA4** microswitch is used to configure the clock and switch the card to programming mode.

CA4.1	CA4.2	SWITCH	MODE
OFF	OFF		Clock signal not used
ON	OFF		Normal mode - Clock signal used (factory setting)
	ON		Programming mode

* ■ Represents the microswitch.

TABLEAU 4.51 CONFIGURATION OF THE CA4 MICROSWITCH ON THE LT2 CARD

4.13.4.5 Installation and wiring

Caution: *Activating a card connected to an ISDN network requires special programming on Aastra Management Portal.*

The LT2 card cannot be hot-plugged in a working iPBX. The iPBX must be powered off before inserting the card.

This card must be connected with cable No. HG4731.

4.13.5 PT2 card

4.13.5.1 Overview

The PT2 card provides both a "TCP/IP – internal buses" gateway function for signalling and a "voice over IP" gateway function. It is used for connection to an Ethernet 10/ 100 Mbits Base TX LAN socket, in compliance with IEEE 802.3 specifications.

It is able to manage 8, 16 or 32 VoIP gateway channels, with the addition of an optional VoIP daughter card performing speech signal processing tasks.

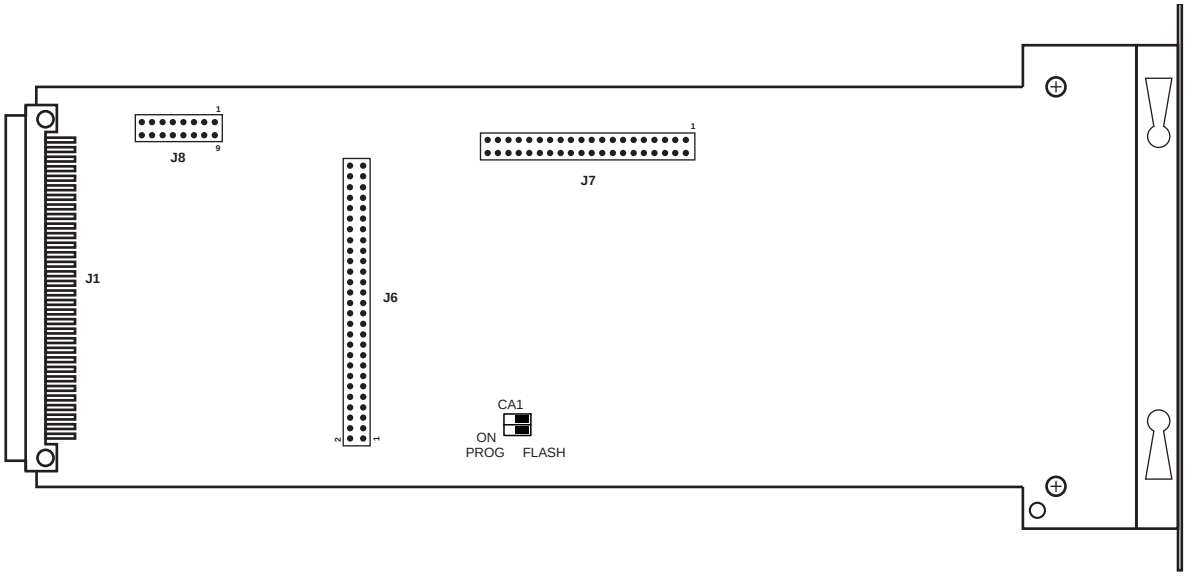
4.13.5.2 Functional description

The PT2 card mainly provides the following functions:

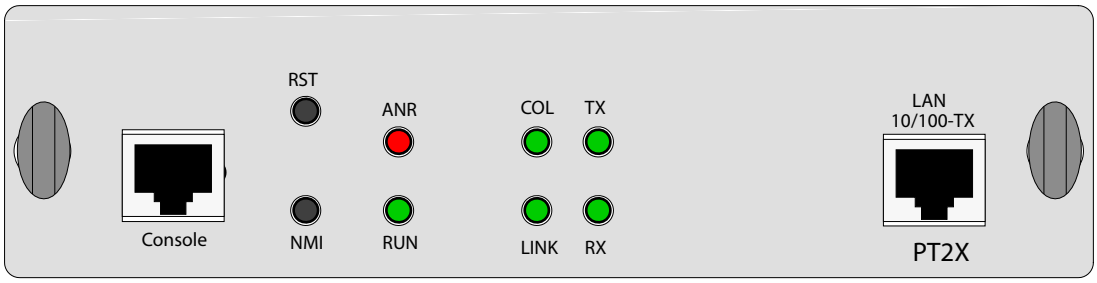
- Gateway between an Ethernet LAN and the internal buses of the iPBX used to exchange data between the main card memory and an Ethernet LAN
- Tunnelling function, for iPBX networking, using an IP network as a medium for the signalling channel
- the Voice over IP (VoIP) gateway function, which uses the VOIP4-8, VOIP4E-16, or VOIP4E- 32 daughter card to manage 8, 16, or 32 Voice over IP circuits, for:
  - speech compression and encoding to the G723.1 or G729A standard or with no encoding (G711),
  - relaying (detection and generation) of fax tones at 2100 Hz and transfer of DTMF codes, in accordance with RFC 2833 (see Doc. AMT/PDD/TDD/0031/01/02/EN),
  - fax modulation and demodulation (rates between 2400 and 14400 bit/s), according to a priority mechanism, in transparent mode (bypass in G711), and electric echo cancellation (G.165).

Caution: *A multi-site link cannot mix a VOIP4E (HotHaus) card in conjunction with a VOIP2 (Audiocodes) card.*

- Power supply: the PLT2 card also receives on the backplane connector (J1) the +5 V supply voltage, used for the operation of its internal circuits.



PT2 CARD



PT2 CARD FRONT PANEL

Figure 4.44 *OVERVIEW OF THE PT2 CARD*

4.13.5.3 *Physical description (see Figure 4.44)*

Connectors

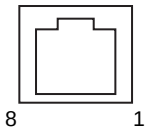
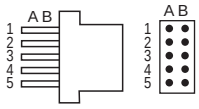
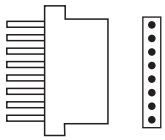
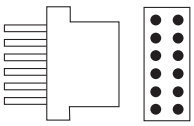
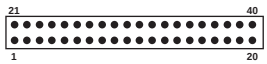
NAME	FUNCTION/CHARACTERISTIC	CONTACTS
J1	96-pin connector: backplane connection.	
10/100-TX LAN  	RJ45 connector: An RJ45 connector can be used to connect a LAN port compatible with the 10 Base T or 100 Base TX standards and compliant with IEEE specification 802.	Pin 1: TPTX+ Pin 2: TPTX- Pin 3: TPRX+ Pin 6: TPRX- Pins 4, 5, 7, and 8: NC
console	RJ45 connector: reserved for the manufacturer.	
J3  	HE14 2 x 5-pin connector: connecting a debug console	not used
J4 	HE14 connector 1 x 8 pins: loading programmable components "on site"	not used
J5 	HE14 connector 2 x 6 pins: connecting an emulator or a JTAG test tool (debug)	not used
J6 and J7  	2 x 40 pin and 2 x 20 pin connectors: location of the VOIP4E daughter card.	

TABLEAU 4.52 DESCRIPTION OF PT2 CARD CONNECTORS

Indicators

The six LEDs described in the table below show the operating state of the card:

INDICATOR	STATE	EXPLANATION
COL (green)	On	Ethernet collision
LINK (green)	On	Status of the Ethernet link: Good link with the Ethernet switch
TX (green)	On	LAN transmitting
RX (green)	On	LAN receiving
RUN (green)	Flashing slowly Flashing rapidly	Card downloading status: Loading software Card in operation
NRA (red)	On	Internal failure detected

TABLEAU 4.53 PRESENTATION OF THE PT2 CARD INDICATORS

This VoIP card has no signalling indicator.

The front panel of the PT2 card includes:

- an "RST" push-button used to reset the card (manufacturer reserved),
- an "NMI" push-button used for an non maskable interruption of the processor (manufacturer reserved).

4.13.5.4 Hardware configuration

The PT2 card has a CA1 configuration microswitch.

DESIGNATION	CONFIGURATION (1)
Operating mode: • normal mode • programming mode (programming the flash memory using the programming tool card)	**CA1 on OFF** CA1 on ON

(1) Factory delivery configuration in bold characters

TABLEAU 4.54 HARDWARE CONFIGURATION OF THE PT2 CARD

4.13.5.5 Installation and wiring

Caution: *Specific programming with Aastra Management Portal is required to declare and activate this card before it can be used.*

The PT2 card cannot be hot-plugged in a working system. The system must be powered off before it is plugged.

This card must be connected with cable No. HG4731.

The system is connected to the Ethernet LAN by plugging the RJ45 connector of the PT2 card into an available LAN socket, as shown in the diagram below:

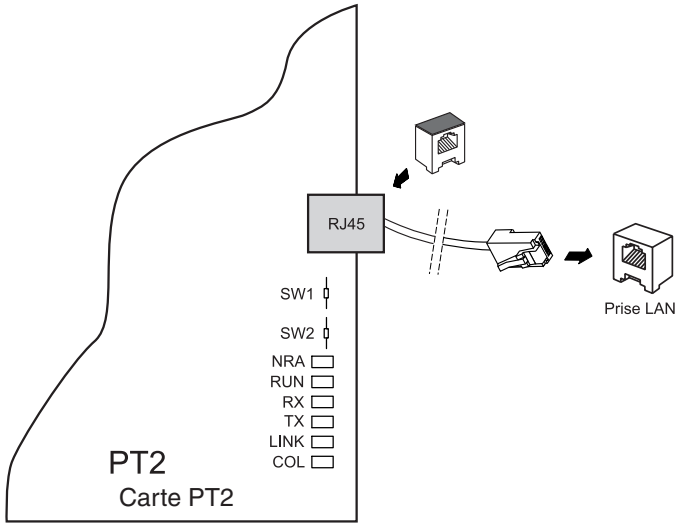


Figure 4.45 *WIRING A PT2 CARD*

4.13.6 CS1 card

4.13.6.1 Description

The CS1 card enables two X.25 synchronous interfaces to be connected in V28 or V10 mode.

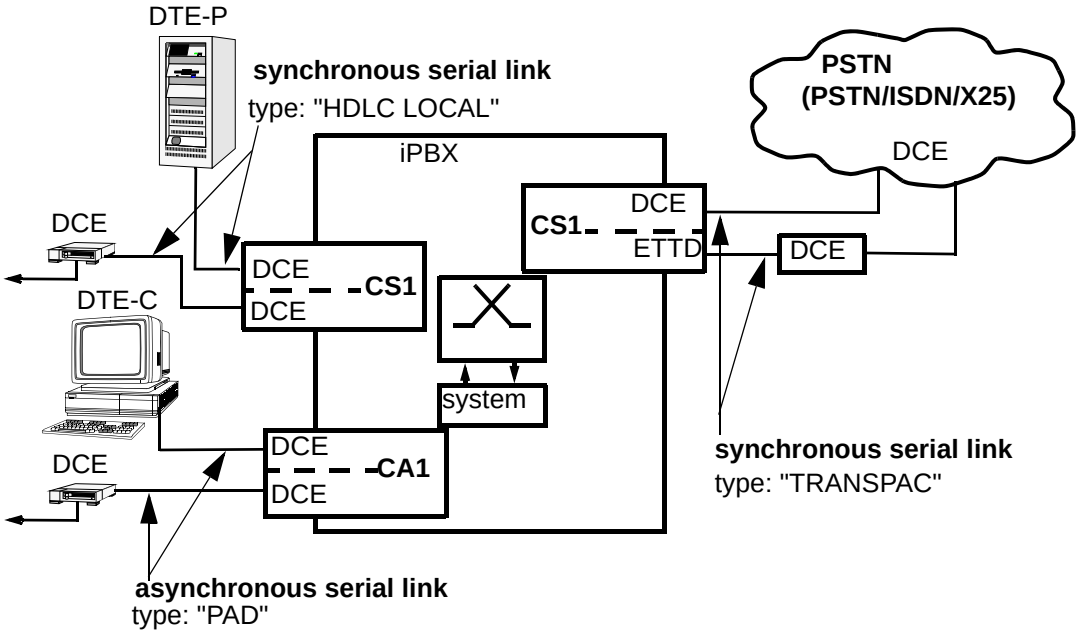
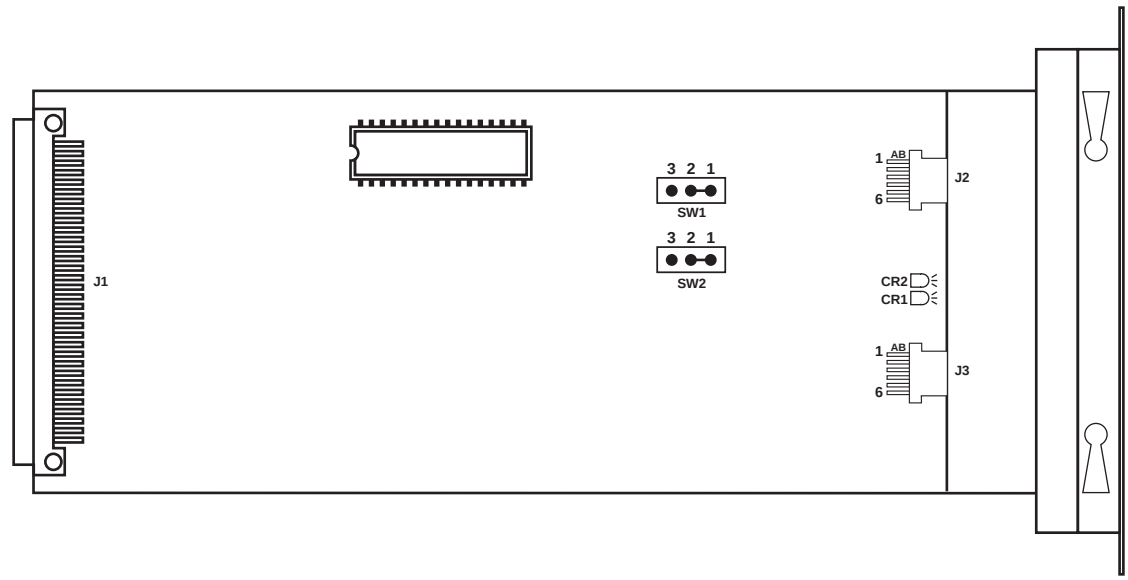
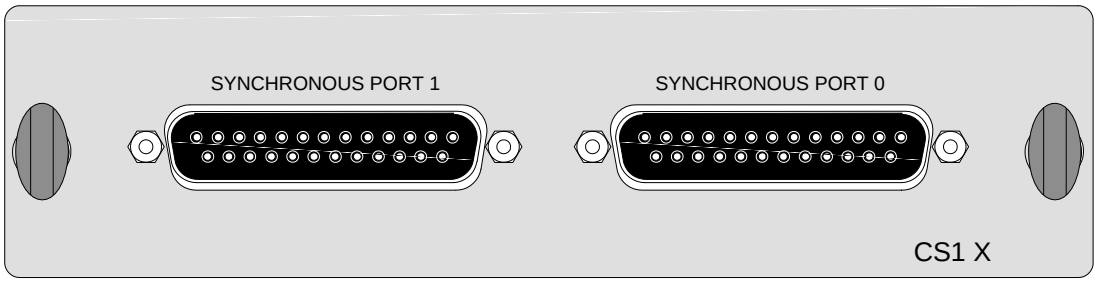


Figure 4.46 *HOW TO USE A CS1 OR CA1 CARD BUILT INTO AN IPBX*



CS1 CARD



CS1 CARD FRONT PANEL

PBX_MATRIX_CARTE_CS1-R1_FAV_01_01

Figure 4.47 *OVERVIEW OF THE CS1 CARD*

4.13.6.2 Physical description

4.13.6.3 Connectors

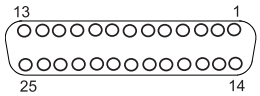
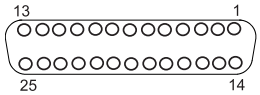
NAME	FUNCTION/CHARACTERISTIC	CONTACTS
J1	96-pin connector: backplane connection	
SYNCHRONOUS PORT 1  (front view)	Connecting equipment 0	(1)
SYNCHRONOUS PORT 2  (front view)	Connecting equipment 1	(1)

TABLEAU 4.55 DESCRIPTION OF CS1 CARD CONNECTORS

(1) **SYNCHRONOUS connectors**: the contacts on these connectors are described in Tableau 4.56 .

PIN NO.	CONTACT	FUNCTION
2	TD	Transmitted data
3	RD	Received data
4	CTS	Flow control input
5	DTR	Data Terminal Ready output
7	GND	0 V return for junction output
8	CD	Signal presence input
15	XTC	Clock signal sent
17	TC	Clock received for received data
20	RTS	Flow control output
24	CR	Clock received for received data

TABLEAU 4.56 CONTACTS OF THE SYNCHRONOUS CONNECTORS ON THE CS1 CARD

Indicators: The indicators are located on the card circuit and not on the front panel.

NAME	STATE	EXPLANATION
CR1 (red)	On steady	Incorrect operation
CR2 (red)	Flashing rapidly	Card in service

TABLEAU 4.57 PRESENTATION OF CS1 CARD INDICATORS

4.13.6.4 Hardware configuration

The SW1 and SW2 microswitches are used to select V10 or V28 mode.

EQUIPMENT NUMBER	CONNECTOR	MICRO-SWITCHES	V10 MODE	V28 MODE
0	J2	SW1		
1	J3	SW2		

TABLEAU 4.58 HARDWARE CONFIGURATION OF THE CS1 CARD

4.13.6.5 Installation and wiring

The shielded serial link cable with the reference HG4660 is used to wire interfaces on the CS1 card. The following tables give a list of the circuits in the V24 junction on the CS1 card.

CIRC[T]	V24 SIGNAL NAME			ETTD ISO 2110 (25 PINS)	DIRECTION CS1->DTE	CS1 CARD CONNECTORS	FUNCTION
	CCITT:	EIA	CS1*			Port1/ Port 2	
104	RD	RD	NDE	3	<---	2	Received data
103	ED	ST/TD	NDR	2	--->	3	Transmitted data
108	TDP	DTR	DTR	20	<---	8	card present output
106	PAE	CTS	CTS	5	--->	20	flow control input
102	TS	GND	SGND	7	--->	7	0 V return for junction output
115	HRM	CR	HR	15-17	--->	17	clock received for received data
113		XTC		24	--->	24	clock signal sent
							not wired
105	DPE	RTS	RTS	4	<---	4	flow control output
109	DS	CD	CD	6-8	<---	5	terminal present input
			RET	7			0 V for junction input (with V10)
114	HEM	TC	HT	15	--->	15	clock received for data transmitted

TABLEAU 4.59 CONNECTING A DCE (CS1) TO A DTE

CIRCT	V24 SIGNAL NAME			DCE ISO 2110 (25 PINS)	DIRECTION CS1-->DCE	CS1 CARD CONNECTORS	FUNCTION
	CCITT:	EIA	CS1			Port1/Port 2	
104	RD	RD	NDE	3	<---	**3**	Received data
103	ED	ST/TD	NDR	2	--->	**2**	Transmitted data
108	TDP	DTR	DTR	20	--->	**5**	card present output
106	PAE	CTS	CTS	5	<---	**4**	flow control input
102	TS	GND	SGND	7	--->	**7**	0 V return for junction outputs
115	HRM	CR	HR	17	<----	**24**	clock received for received data
113		XTC		24	--->	**15**	clock signal sent
							not wired
105	DPE	RTS	RTS	4	--->	**20**	flow control output
109	DS	CD	CD	8	<---	**8**	terminal present input
			RET	7	--->		0 V for junction input (with V10)
114	HEM	TC	HT	15	<----	**17**	clock received for data transmitted

TABLEAU 4.60 CONNECTING A DTE (CS1) TO A DCE

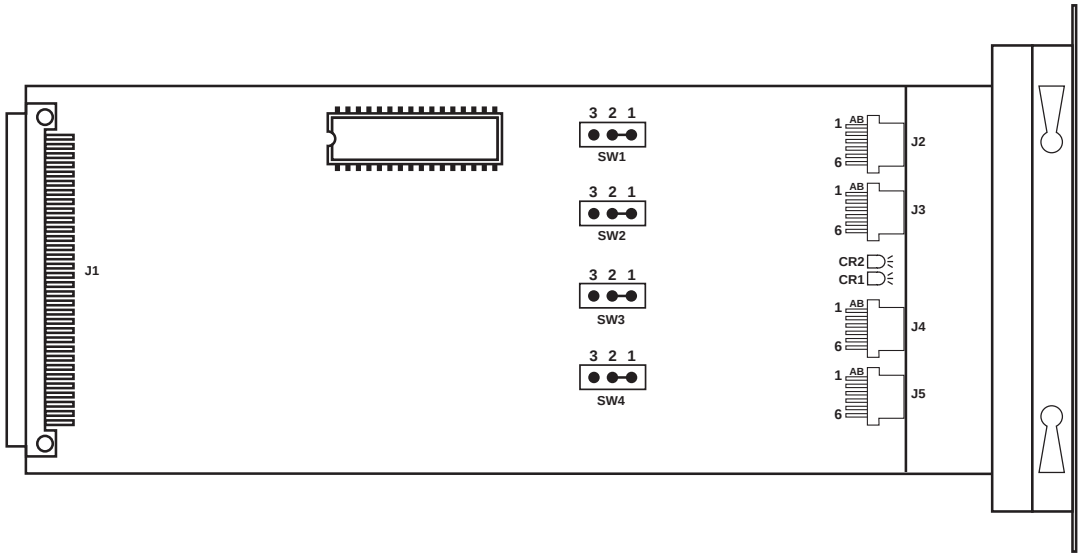
4.13.6.6 CA1 card

4.13.6.7 Description

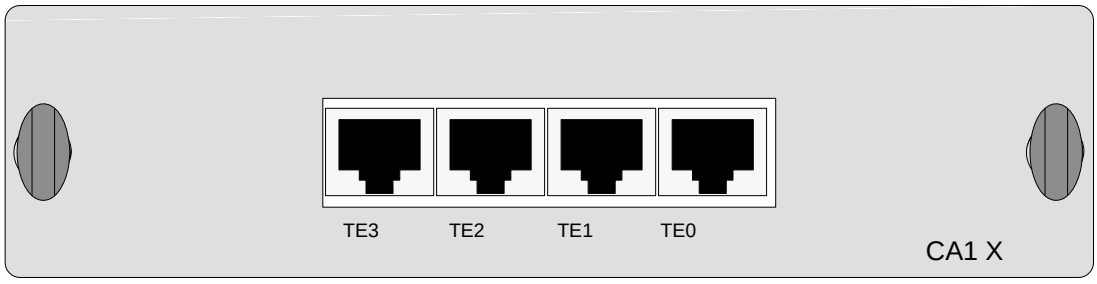
The CA1 card is used to connect V24 computer terminals (DTE or DCE) (see Figure 4.46) in V10 or V28 mode (RS232C). It is fitted with 4 RS232 ports used to connect 4 asynchronous terminals for data transmission (max speed 19200 bit/s). XON/XOFF flow control is used.

Note: *The V24/V10 interface is compatible with V24/V28 (RS232C) equipment.*

See how to use a CA1 card built into an iPBX (Figure 4.46).



CA1 CARD



CA1 CARD FRONT PANEL

PBX_MATRIX_CARTE_CA1-RJ_FAV_01_01

Figure 4.48 *OVERVIEW OF THE CA1 CARD*

4.13.6.8 Physical description (see Figure 4.48)

Connectors

NAME	FUNCTION/CHARACTERISTIC	CONTACTS
J1	96-pin connector: backplane connection	(1)
TE0 to TE3: 1	Connecting equipment items 0 to 3	(2)

TABLEAU 4.61 DESCRIPTION OF CA1 CARD CONNECTORS

(1) **Connectors TE0 to TE3**: the contacts of these RJ45 connectors are described in Tableau 4.62 .

	LINE NO.				
PIN NO. *	**TE3**	**TE2**	**TE1**	**TE0**	**FUNCTION**
1	TD3	TD2	TD1	TD0	Transmitted data
2	GND	GND	GND	GND	0 V return for junction output
3	RD3	RD2	RD1	RD0	Received data
4	RET3	RET2	RET1	RET0	0V return for junction input (V10)
5	DTR3	DTR2	DTR1	DTR0	Data Terminal Ready output
6	CTS3	CTS2	CTS1	CTS0	Flow control input
7	RTS3	RTS2	RTS1	RTS0	Flow control output
8	CD3	CD2	CD1	CD0	Data terminal input

TABLEAU 4.62 DESCRIPTION OF CA1 CARD CONNECTORS TE0 - TE3

Indicators The indicators are located on the card circuit and not on the front panel.

NAME	STATE	EXPLANATION
CR1 (red)	On steady	Incorrect operation
CR2 (red)	Flashing rapidly	Card in service

TABLEAU 4.63 PRESENTATION OF THE CA1 CARD INDICATORS

4.13.6.9 Hardware configuration

Switches SW1, SW2, SW3, and SW4 are used to set V10 or V28 mode.

EQUIPMENT NUMBER	CONNECTOR	SWITCH	V10 MODE	V28 MODE
0	J2	SW1		
1	J3	SW2		
2	J4	SW3		
3	J5	SW4		

TABLEAU 4.64 HARDWARE CONFIGURATION OF THE CA1 CARD

4.13.6.10 Installation and wiring

The following tables give a list of the circuits in the V24 junction on the CA1 card. The cable, with the reference HG4659, is used to wire the CA1 card interfaces.

CIRCT	DESIGNATION			ETTD		DIRECTION CA1->DTE	CONNECTORS CA1 CARD	FUNCTION
	CCITT:	EIA	CA1	9-PIN	25-PIN		TE0 to TE3:	
104	RD	RD	NDE	2	3	--->	**1**	Received data
103	ED	ST/TD	NDR	3	2	<---	**3**	Transmitted data
108	TDP	DTR	DTR	4	20	<---	**8**	card present output
106	PAE	CTS	CTS	8	5	--->	**7**	flow control input
102	TS	GND	SGND	5	7	<---	**2**	0 V return for junction output
								not wired
								not wired
105	DPE	RTS	RTS	7	4	<---	**6**	flow control output
109	DS	CD	CD	1-6	6-8	--->	**5**	terminal present input
			RET	5	7		**4**	0 V for junction input (with V10)

Note: *Circuit 107 “Data set ready” (PDP or DSR) is not present on the CA1 card. The straps are not shown in this table.*

TABLEAU 4.65 CONNECTING A DCE (CA1) TO A DTE (PC OR VT100 CONSOLE)

CIRC[T]	DESIGNATION			DCE		DIRECTION CA1->DCE	CONNECTORS CA1 CARD	FUNCTION
	CCITT:	EIA	CA1	9-PIN	25-PIN		TE0 to TE3:	
104	RD	RD	NDE	2	3	<---	**3**	Received data
103	ED	ST/TD	NDR	3	2	--->	**1**	Transmitted data
108	TDP	DTR	DTR	4	20	--->	**5**	card present output
106	PAE	CTS	CTS	8	5	<---	**6**	flow control input
102	TS	GND	SGND	5	7	--->	**2**	0 V return for junction output
								not wired
								not wired
105	DPE	RTS	RTS	7	4	--->	**7**	flow control output
109	DS	CD	CD	1	8	<---	**8**	terminal present input
			RET	5	7		**4**	0 V for junction input (with V10)

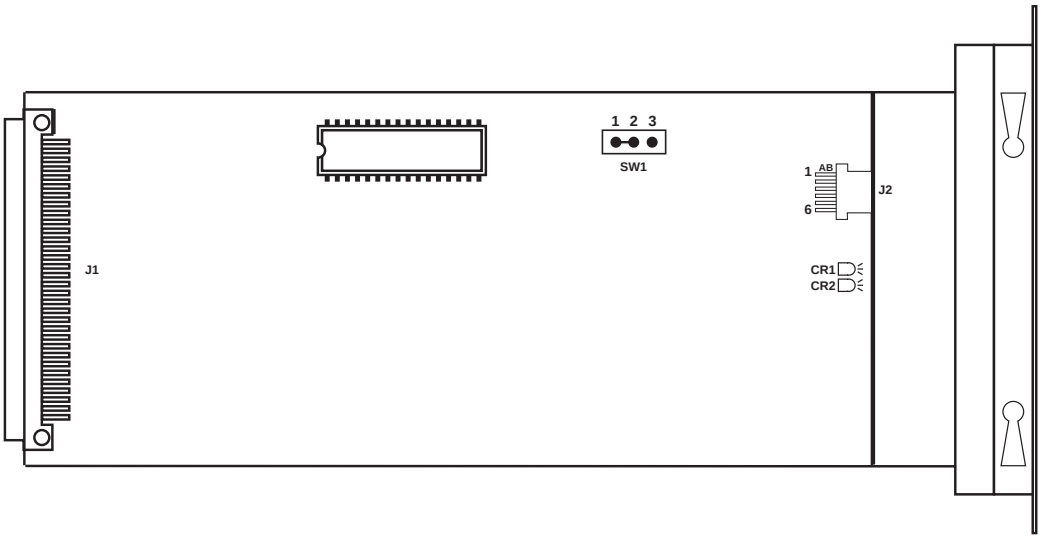
Note: *Circuit 107 “Data set ready” (PDP or DSR) is not present on the CA1 card. The straps are not shown in this table.*

TABLEAU 4.66 CONNECTING A DTE (CA1) TO A DCE (MODEM OR V24 ADAPTER)

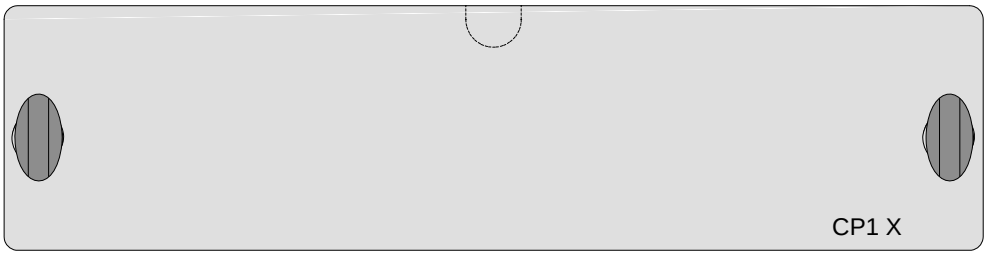
4.13.7 CP1 card

4.13.7.1 Description

The CP1 card carries out circuit/packet switching, for X.25 protocol, used to transmit data in packet mode in a B channel of a Numéris link



CP1 CARD



PBX_MATRIX_CARTE_CP1-RJ_FAV_01.01

CP1 CARD FRONT PANEL

Figure 4.49 *OVERVIEW OF THE CP1 CARD*

4.13.7.2 Physical description (see Figure 4.49)

Connectors

The connector **J2** is reserved for factory tests.

This card has no external connections.

Indicators The indicators are located on the card circuit and not on the front panel.

NAME	STATE	EXPLANATION
CR1 (red)	On steady	Incorrect operation
CR2 (red)	Flashing rapidly	Card in service

TABLEAU 4.67 PRESENTATION OF THE CP1 CARD INDICATORS

4.13.7.3 Hardware configuration

Jumper SW1 must be configured as shown on the diagram, with slots 1 and 2 connected together.

4.13.7.4 Installation and wiring

This card has no external connections.

4.13.8 MUM card

4.13.8.1 Description

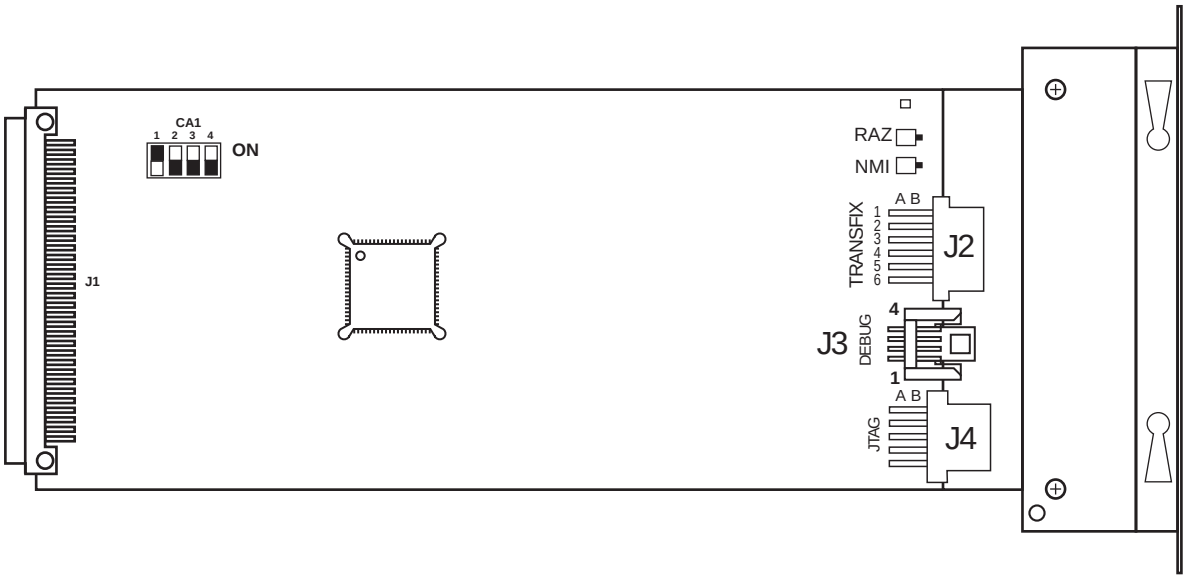
Voice/Fax multiplexer/demultiplexer card, used to multiplex/demultiplex several calls between 2 sites of an M6500 network on:

- a call set up over the ISDN public network,
- a Transfix lease line at 64 or 128 kb/s

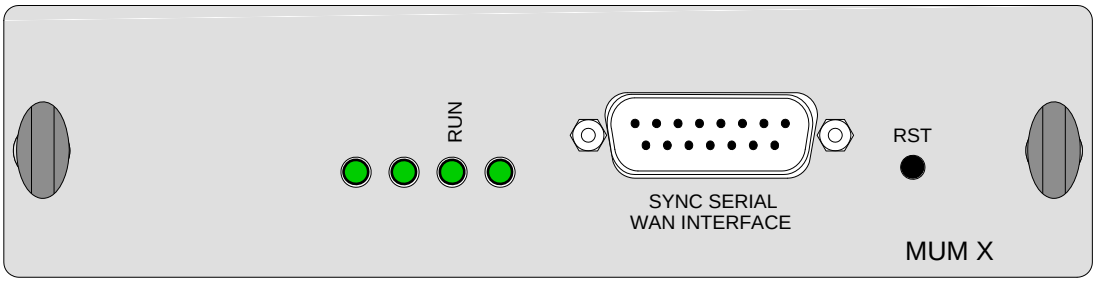
4.13.8.2 Functional description

The MUM card can be used in three different ways:

- as a single multiplexer (8 channels to 1) to a remote site through a lease line (type Transfix),
- as a single multiplexer (7 channels to 1) to a remote site on the ISDN public network,
- as a double multiplexer (3 channels to 1) to two remote sites on the ISDN public network.



MUM CARD



MUM CARD FRONT PANEL

Figure 4.50 *OVERVIEW OF THE MUM CARD*

PBX_MATRIX_CARTE_MUM-RJ_FAV_01_01

4.13.8.3 Physical description (see Figure 4.50)

Connectors

NAME	FUNCTION/CHARACTERISTIC	CONTACTS
J1	96-pin connector: backplane connection	
Sync Serial Wan Interface	DB15 connector: Connection to a QSIG private point-to-point link (X24/ V11)	• Pin 1: screen • Pin 2: Ta (TD+) • Pin 3: Ca to be looped with 5 • Pin 4: Ra (RD+) • Pin 5: La • Pin 6: Sa (CLK+) • Pin 7: NC • Pin 8: GND • Pin 9: Tb (TD-) • Pin 10: Cb to be looped with 12 • Pin 11: Rb (RD -) • Pin 12: Lb • Pin 13: Sb (CLK-) • Pin 14: NC • Pin 15: NC

TABLEAU 4.68 DESCRIPTION OF MUM CARD CONNECTORS

Indicators

NAME	STATE	EXPLANATION
RUN	Flashing	Card operating normally

TABLEAU 4.69 PRESENTATION OF MUM CARD INDICATORS

Push buttons

The front panel of the MUM card includes:

- an "RST" push-button used to reset the card (reserved manufacturer).

4.13.8.4 Hardware configuration

The hardware configuration of the MUM card is described in Document [7] (see section 1.3).

4.13.8.5 Installation and wiring

The installation details for the MUM card are described in Document [7] (see section 1.3).

The cable reference for the MUM card is HG4601A.

4.14 Equipment cards

4.14.1 LA16X card

4.14.1.1 Description

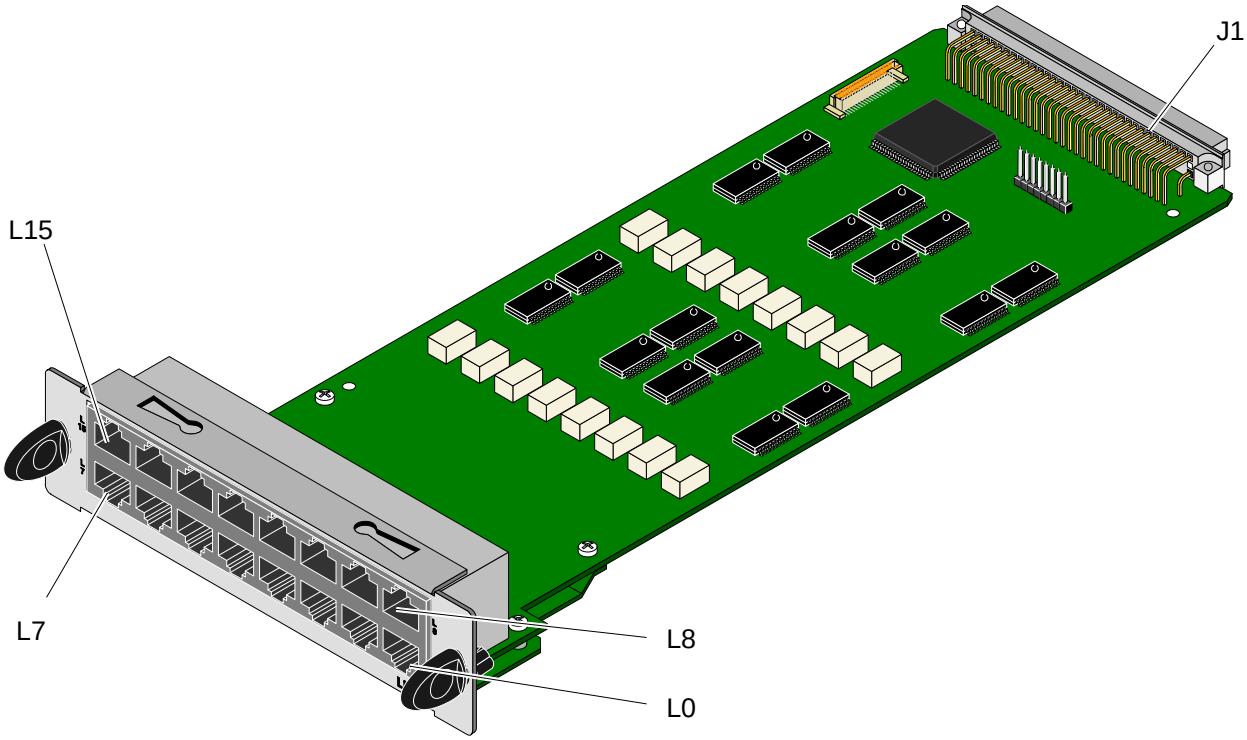
The LA16X card is used to connect 16 analogue set lines to an iPBX.

4.14.1.2 Functional description

The LA16X card mainly ensures:

- The transmission of the status and command signals between the UCV card and each analogue set:
  - the commands for analogue sets: for each connection a ring signal command supplied by the UCV card authorises passage of the current to the analogue set connected.
  - the statuses from the analogue sets (on/off hook detection)
- Voice transmission and conversion:
  - in digital form, from the UCV card to the analogue sets

    Each of the 16 PCM TSs exchanged with the UCV card is the medium for the voice carried over the line of an analogue set.
  - in analogue form, from the analogue sets to the UCV card.
    - This transformation uses parameters for converting digital signals into analogue signals, and analogue signals into digital signals.
    - These parameters stored initially in the UCV card are loaded into the memory of the LA16X card when the latter is started.
- A power supply function: the LA16X card receives the following on the backplane connector (J1):
  - +5 V, -5 V used for the operation of its internal circuits,
  - -48 V used to supply the analogue set lines,
  - 70 V AC of the ringing current for each of the analogue sets connected.



LA16X CARD

Figure 4.51 *OVERVIEW OF THE LA16X CARD*

4.14.1.3 Physical description (see Figure 4.51)

Connectors

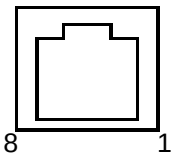
NAME	FUNCTION/CHARACTERISTIC	CONTACTS
J1	96-pin connector: backplane connection	
L0 to L15  	RJ45 connectors: each socket provides one connection to an analogue set	• Pin 4: analogue set (i)+ • Pin 5: analogue set (i)- • Pins 1, 2, 3, 6, 7, and 8: NC

TABLEAU 4.70 DESCRIPTION OF THE LA16X CARD CONNECTORS

Indicators

This card has no signalling indicator.

4.14.1.4 Hardware configuration

This card has no configuration microswitch.

4.14.1.5 Installation and wiring

The LA16X card can be hot-plugged in an AXD, AXL, AXS or AXS12 iPBX in normal operation.

The requirements for connecting an analogue terminal are:

- the voltage and current measured across the station during conversation must be: U > 12,4 V and I > 25 mA,
- line resistance (taking the set into account): 600 Ohms,
- all the analogue terminals connected to the PBX must be configured for Zref impedance and self-regulation.

This card must be connected with cables with the following references: HG4765B, HG4765C or HG4731.The minimum diameter of the cables has to be 26AWG (0.4mm).

The principle for wiring an analogue set is shown in the diagram below:

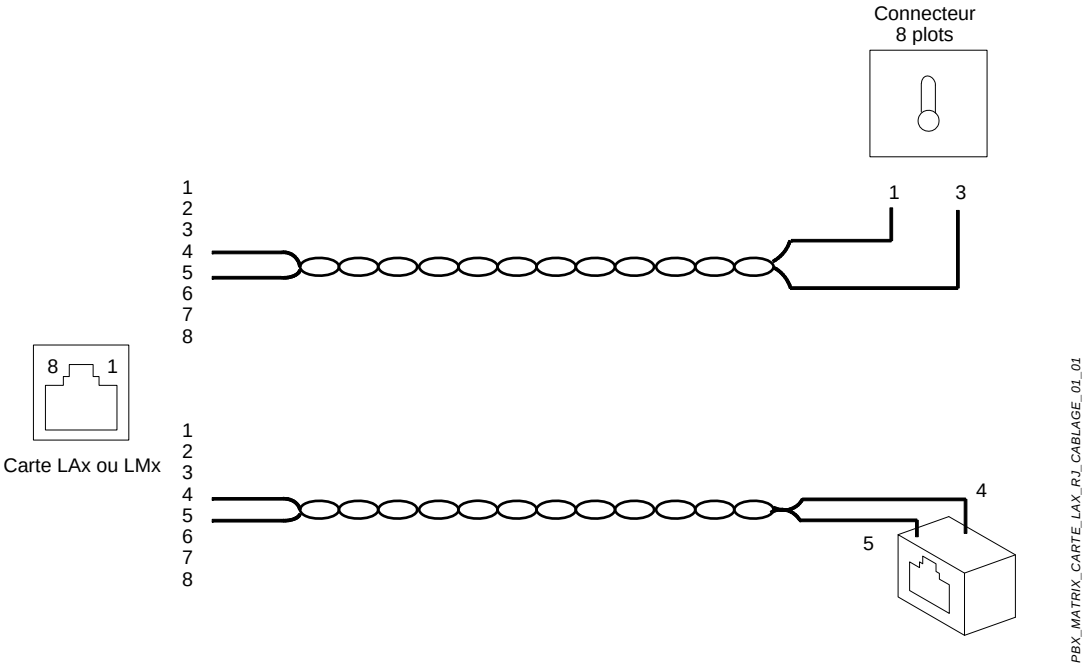


Figure 4.52 *WIRING AN LAX OR LMX CARD*

Each line is supplied with balanced direct current. This voltage may vary between -43 V and -56 V.

The maximum line resistance for a 22mA current is 1000 Ohm. The maximum line current for a 200 Ohm resistance is 40 mA. With the "set on hook" the permanent line current can reach 2.5 mA maximum without interference.

The wiring constraints are:

- maximum line length:
  - 0.4 mm wire: about 2 km,
  - 0.6 mm wire: about 3.5 km.

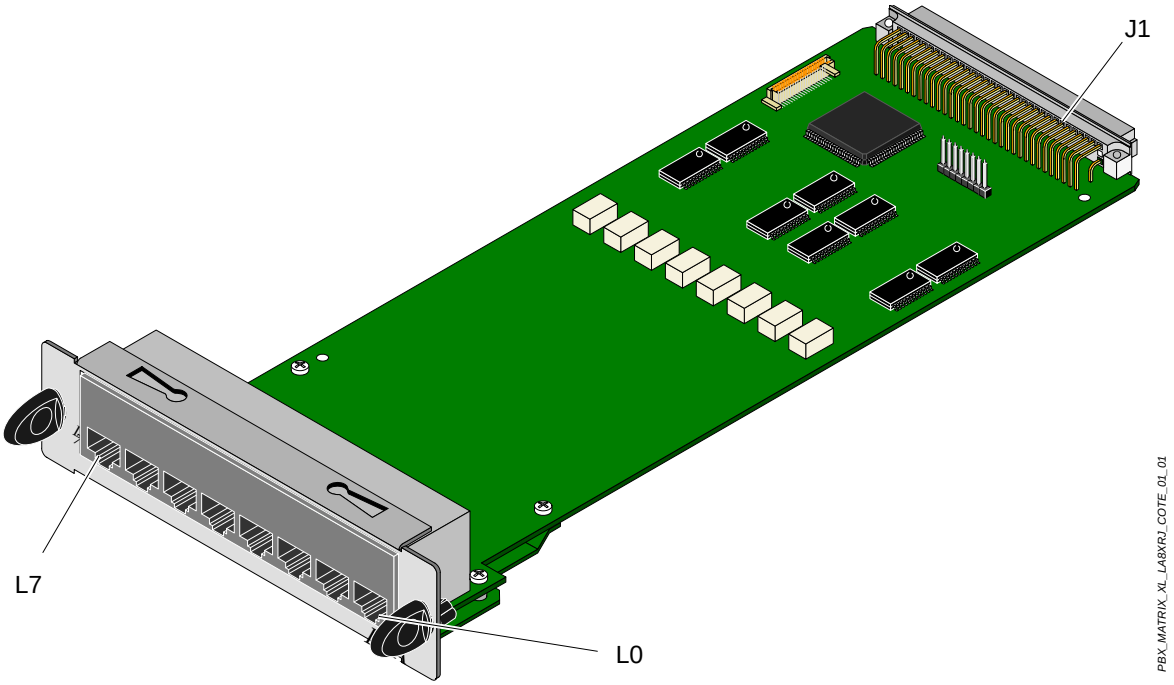
4.14.2 LA16X-8 card

4.14.2.1 Description

The LA16X-8 card is used to connect 8 analogue set lines to an iPBX.

4.14.2.2 Functional description

The LA16X-8 card is functionally identical to the LA16X card (see Section4.14.1.2) except that it provides an interface with only 8 analogue sets.



LA16X-8 CARD

Figure 4.53 *OVERVIEW OF THE LA16X-8 CARD*

4.14.3 Physical description (see Figure 4.53)

Connectors

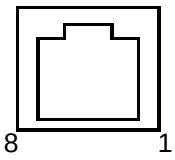
NAME	FUNCTION/CHARACTERISTIC	CONTACTS
J1	96-pin connector: backplane connection	
L0 to L7  	RJ45 connectors: each socket provides one connection to an analogue set	• Pin 4: analogue set (i)+ • Pin 5: analogue set (i)- • Pins 1, 2, 3, 6, 7, and 8: NC

TABLEAU 4.71 DESCRIPTION OF LA16X-8 CARD CONNECTORS

Indicators

This card has no signalling indicator.

4.14.3.1 Hardware configuration

This card has no configuration microswitch.

4.14.3.2 Installation and wiring

The LA16X-8 card can be hot-plugged in an AXD, AXL, AXS or AXS12 iPBX in normal operation.

The other constraints relating to installing and wiring the LA16X card are identical to those for the LA16X-8 card (see Section 4.14.1.5).

The minimum diameter of the cables has to be 26AWG (0.4mm).

4.14.4 LA8 card

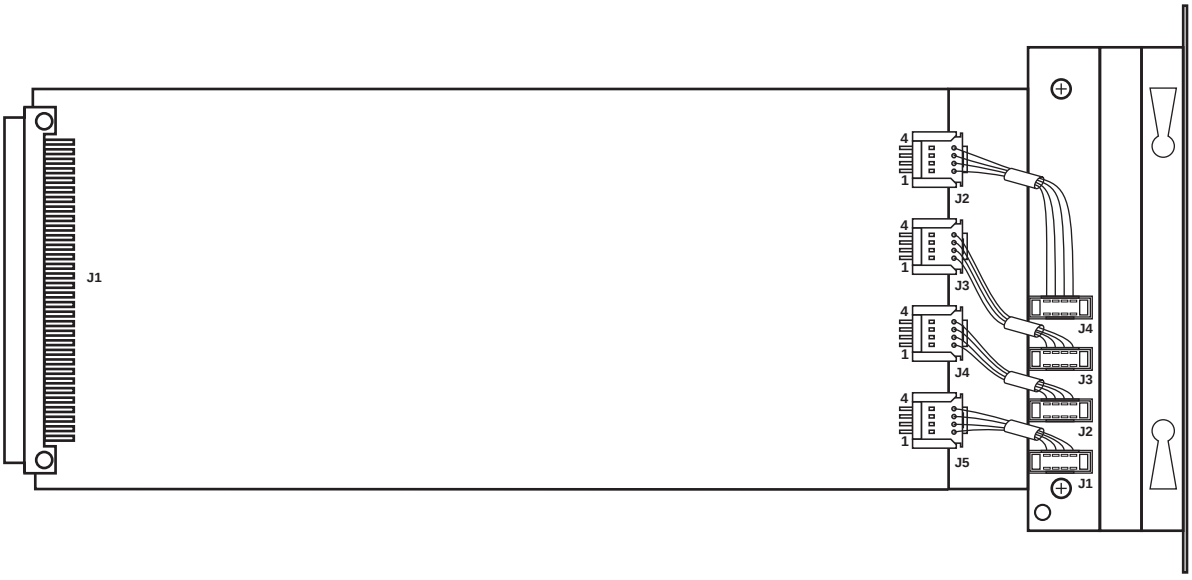
4.14.4.1 Description

The LA8 card is used to connect 8 analogue set lines to an iPBX.

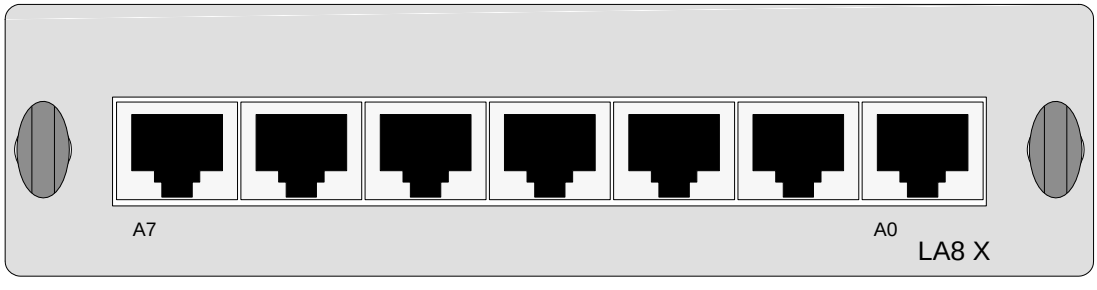
4.14.4.2 Functional description

The LA8 card is functionally identical to the LA16X card (see section 4.14.1.2) except for the following differences:

- it ensures interfacing with only 8 analogue sets,
- the parameters for converting digital signals into analogue signals and from analogue signals to digital signals are not loaded into the memory of the LA8 card when started, but pre-programmed in the card at the factory.



LA8 CARD



LA8 CARD FRONT PANEL

Figure 4.54 *OVERVIEW OF THE LA8 CARD*

4.14.4.3 Physical description (see Figure 4.54)

Connectors

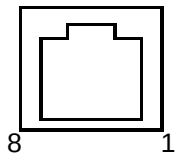
NAME	FUNCTION/CHARACTERISTIC	CONTACTS
J1	96-pin connector: backplane connection.	
A0 to A7  	RJ45 connectors: each socket provides one connection to an analogue set	• Pin 4: analogue set (i)+ • Pin 5: analogue set (i)- • Pins 1, 2, 3, 6, 7, and 8: NC

TABLEAU 4.72 DESCRIPTION OF LA8 CARD CONNECTORS

Indicators

This card has no signalling indicator.

4.14.4.4 Hardware configuration

The LA8 card has no configuration microswitch.

4.14.4.5 Installation and wiring

The LA8 card cannot be hot-plugged in a working iPBX. The iPBX must be powered off before inserting the card. An LA8 card cannot be plugged into AXD and AXL expansion cabinets either.

The other constraints relating to installing and wiring the LA8 card are identical to those for the LA16X card (see Section 4.14.1.5).

The minimum diameter of the cables has to be 26AWG (0.4mm).

4.14.5 LN16X card

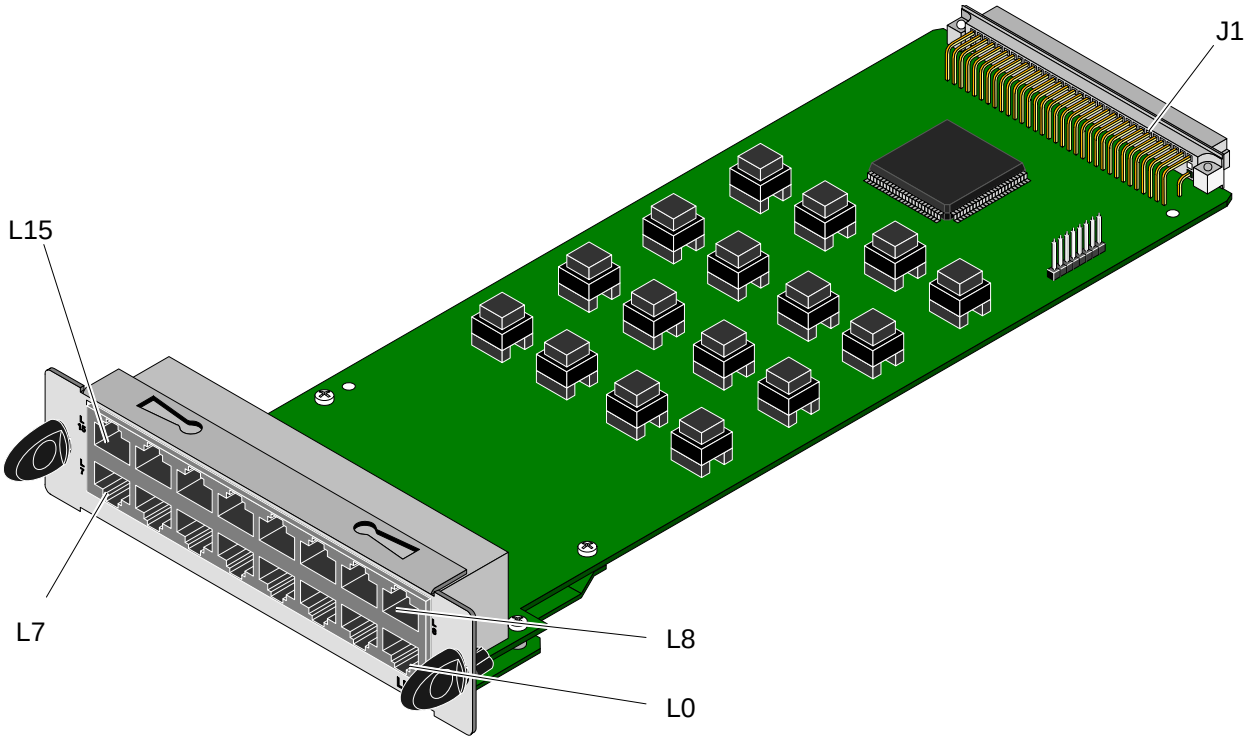
4.14.5.1 Description

The LN16X card is used to connect 16 digital set lines to an iPBX.

4.14.5.2 Functional description

The LN16X card ensures:

- The transmission of signals between the UCV card and the D channel at 8 kbit/s on each of the lines connected to a digital set
- Voice transmission between each of the 16 PCM TSs exchanged internally with the UCV card and the B channel at 64 kbit/s on each of the 16 lines connected to a digital set
- A power supply function: The LN16X card receives several supply voltages on the backplane connector (J1):
  - +5 V, -5 V used for the operation of its internal circuits,
  - -48 V used to supply the digital set lines.



LN16X CARD

Figure 4.55 *OVERVIEW OF THE LN16X CARD*

4.14.5.3 Physical description (see Figure 4.55)

Connectors

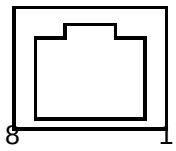
NAME	FUNCTION/CHARACTERISTIC	CONTACTS
J1	96-pin connector: backplane connection.	
L0 to L15  	RJ45 connectors: each socket provides one connection to a digital set	• Pin 4: digital set (i)+ • Pin 5: digital set (i)- • Pins 1, 2, 3, 6, 7, and 8: NC

TABLEAU 4.73 DESCRIPTION OF LN16X CARD CONNECTORS

Indicators

This card has no signalling indicator.

4.14.5.4 Hardware configuration

The LN16X card has no configuration microswitch.

4.14.5.5 Installation and wiring

The LN16X card can be hot-plugged in an AXD, AXL, AXS or AXS12 iPBX in normal operation.

It is essential to respect the standards between weak and strong currents.

The distance between the telephone cable and the source of interference (electrical conductor, mains, fluorescent light with starter, etc.) must be at least 30 cm (12 in).

Do not connect two telephone sockets to the iPBX at the same time.

Digital telephones cannot be used as emergency sets (e.g. during a power failure)

Maximum line length:

- 0.4 mm wire: about 1000 m,
- 0.6 mm wire: about 1800 m.

The cards must be connected with cables with the following references: HG4765B, HG4765C or HG4731.

The minimum diameter of the cables has to be 26AWG (0.4mm).

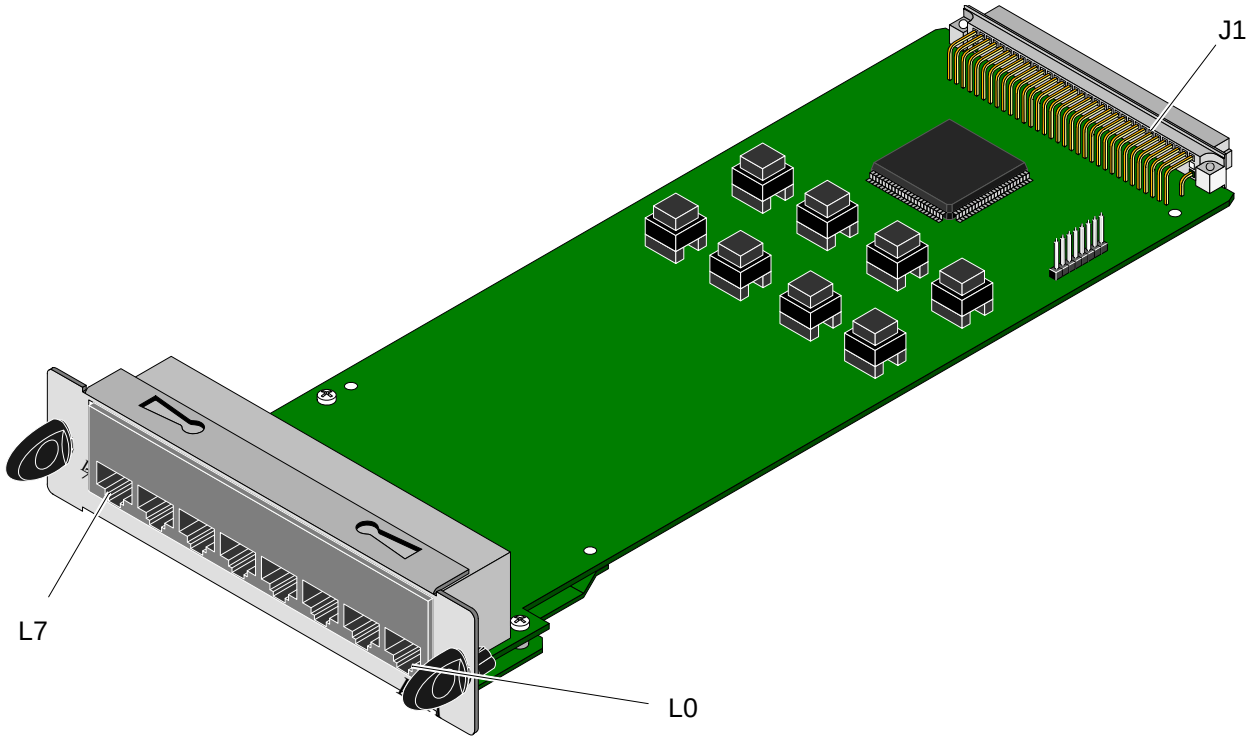
4.14.6 LN16X-8 card

4.14.6.1 Description

The LN16X-8 card is used to connect 8 digital set lines to an iPBX.

4.14.6.2 Functional description

The LN16X-8 card is functionally identical to the LN16X card (see Section4.14.5.2) except that it provides an interface with only 8 digital sets.



LN16X-8 CARD

Figure 4.56 *OVERVIEW OF THE LN16X-8 CARD*

4.14.7 Physical description (see Figure 4.56)

Connectors

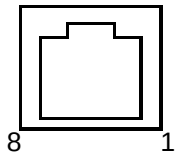
NAME	FUNCTION/CHARACTERISTIC	CONTACTS
J1	96-pin connector: backplane connection.	
L0 to L7  	RJ45 connectors: each socket provides one connection to a digital set	• Pin 4: digital set (i)+ • Pin 5: digital set (i)- • Pins 1, 2, 3, 6, 7, and 8: NC

TABLEAU 4.74 DESCRIPTION OF LN16X-8 CARD CONNECTORS

Indicators

This card has no signalling indicator.

4.14.7.1 Hardware configuration

The LN16X-8 card has no configuration microswitch.

4.14.7.2 Installation and wiring

The LN16X-8 card can be hot-plugged in an AXD, AXL, AXS or AXS12 iPBX in normal operation.

It is essential to respect the standards between weak and strong currents.

The distance between the telephone cable and the source of interference (electrical conductor, mains, fluorescent light with starter, etc.) must be at least 30 cm (12 in).

Do not connect two telephone sockets to the iPBX at the same time.

Digital telephones cannot be used as emergency sets (e.g. during a power failure)

Maximum line length:

- 0.4 mm wire: about 1000 m,
- 0.6 mm wire: about 1800 m.

The cards must be connected with cables with the following references: HG4765B, HG4765C or HG4731.

The minimum diameter of the cables has to be 26AWG (0.4mm).

4.14.8 LN8 card

4.14.8.1 Description

The LN8 card is used to connect 8 digital set lines to an iPBX.

4.14.8.2 Functional description

The LN8 card is functionally identical to the LN16X card (see Section 4.14.5.2) except that it provides an interface with only 8 digital sets.

4.14.8.3 Physical description (see Figure 4.57)

Connectors

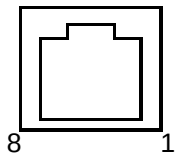
NAME	FUNCTION/CHARACTERISTIC	CONTACTS
J1	96-pin connector: backplane connection.	
N0 to N7  	RJ45 connectors: each socket provides one connection to a digital set.	• Pin 4: digital set (i)+ • Pin 5: digital set (i)- • Pins 1, 2, 3, 6, 7, and 8: NC

TABLEAU 4.75 DESCRIPTION OF THE LN8 CARD CONNECTORS

Indicators

This card has no signalling indicator.

4.14.8.4 Hardware configuration

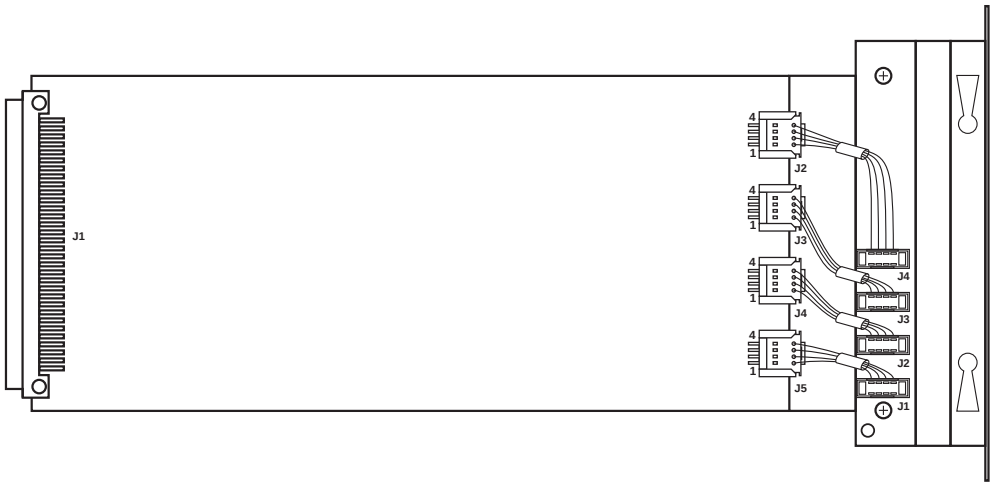
The LN8 card has no configuration microswitch.

4.14.8.5 Installation and wiring

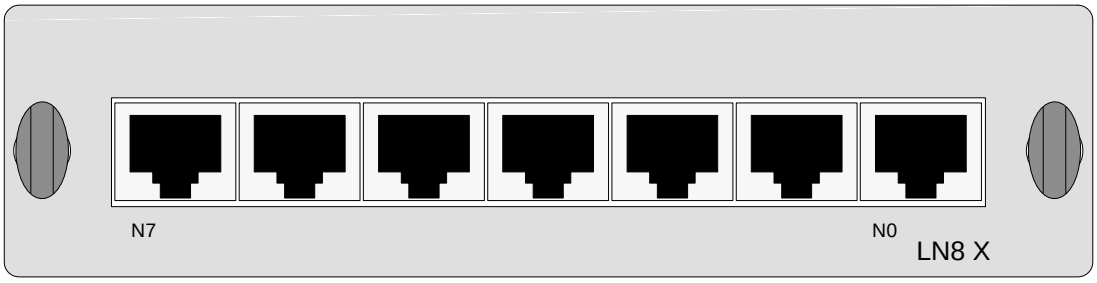
The LN8 card cannot be hot-plugged in a working iPBX. The iPBX must be powered off before inserting the card. An LN8 card cannot be plugged into AXD and AXL expansion cabinets either.

The other constraints relating to installing and wiring the LN8 card are identical to those for the LN16X card (see Section 4.14.5.5).

The minimum diameter of the cables has to be 26AWG (0.4mm).



LN8 CARD



LN8 CARD FRONT PANEL

PBX_MATRIX_CARTE_LN8-RJ_FAV_01_01

Figure 4.57 *OVERVIEW OF THE LN8 CARD*

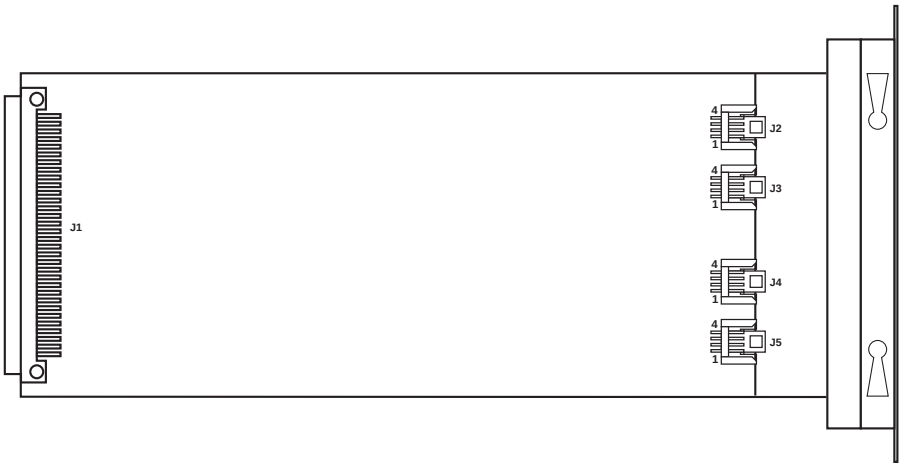
4.14.9 LM8 card

4.14.9.1 Description

The LM8 card is used to connect 4 digital and 4 analogue set lines to an iPBX.

4.14.9.2 Functional description

The LM8 card performs the functions of both the LA8 card (see Section4.14.4.2) and those of the LN8 card (see Section4.14.8.2).



LM8 CARD

PBX_MATRIX_CARTE_LM8-RJ_FAV_01_01

LM8 CARD FRONT PANEL

Figure 4.58 *OVERVIEW OF THE LM8 CARD*

4.14.9.3 Physical description (see Figure 4.58)

Connectors

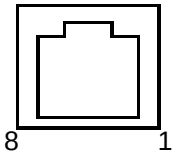
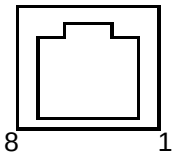
NAME	FUNCTION/CHARACTERISTIC	CONTACTS
J1	96-pin connector: backplane connection.	
A0 to A3  	RJ45 connectors: each socket provides one connection to an analogue set	• Pin 4: analogue set (i)+ • Pin 5: analogue set (i)- • Pins 1, 2, 3, 6, 7, and 8: NC
N4 to N7  	RJ45 connectors: each socket provides one connection to a digital set	• Pin 4: digital set (i)+ • Pin 5: digital set (i)- • Pins 1, 2, 3, 6, 7, and 8: NC

TABLEAU 4.76 DESCRIPTION OF THE LM8 CARD CONNECTORS

Indicators

This card has no signalling indicator.

4.14.9.4 Hardware configuration

The LM8 card has no configuration microswitch.

4.14.9.5 Installation and wiring

The LM8 card cannot be hot-plugged in a working AXD and AXL iPBX. The iPBX must be powered off before inserting the card. An LM8 card cannot be plugged into AXD and AXL expansion cabinets either.

The constraints for wiring are those relating to connection with analogue sets (see Section4.14.1.5) and digital sets (see Section4.14.5.5).

The minimum diameter of the cables has to be 26AWG (0.4mm).

4.14.10 LH8 card

4.14.10.1 Description

The LH8 card is used to connect 8 analogue hotel terminals to an iPBX.

The LH8 card has the same features as the LA8 card, plus an extra feature that lights up an LED on sets if messages have been left (for hotel configuration).

4.14.10.2 Functional description

The LH8 card has the same features as the LA8 card (see Section4.14.4.2), plus an extra feature that lights up an LED to inform the user connected that a message has been left (example of use: hotel customer reception).

The LED signal command is sent to the central unit (UCV card), which activates a high voltage current generator built into the card providing the power supply (105 V DC) required for the operation of the lamps on hotel sets.

4.14.10.3 Physical description (see Figure 4.58)

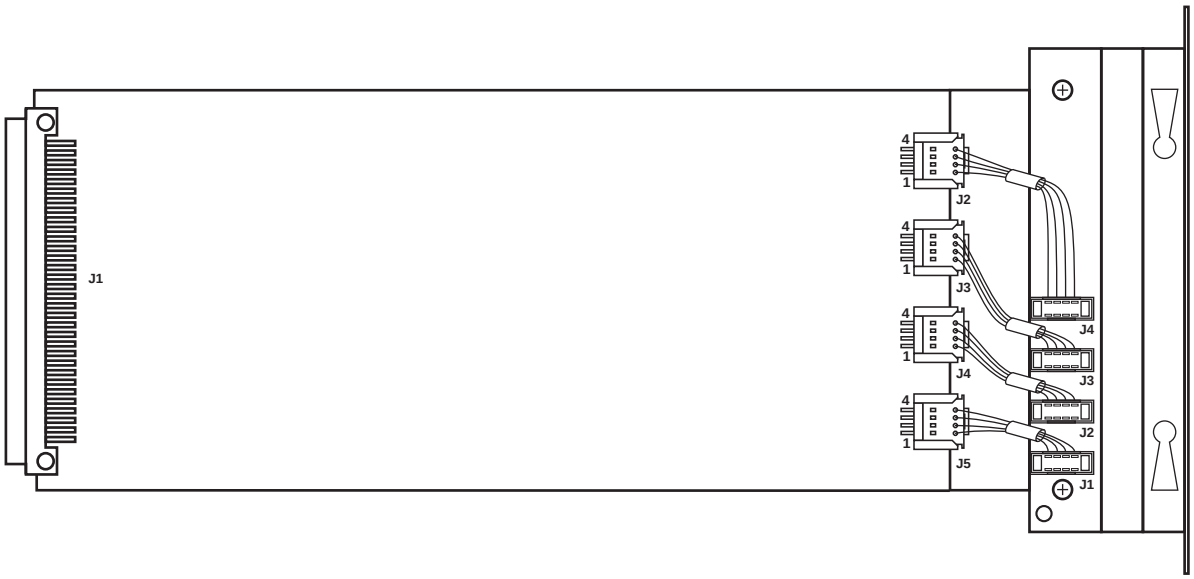
The LH8 card has the same physical features as the LA8 card (see section 4.14.4.3).

4.14.10.4 Installation and wiring

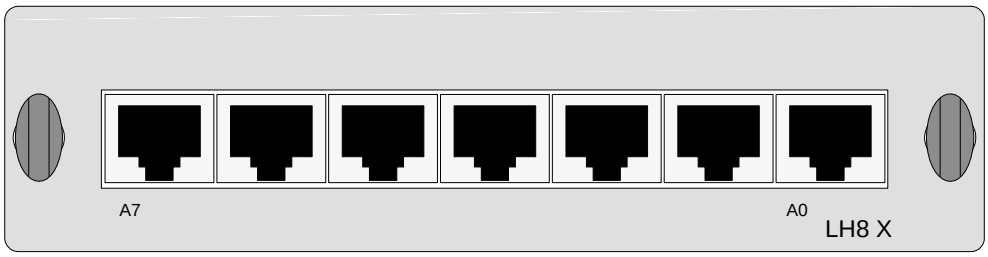
The LH8 card cannot be hot-plugged in an operational iPBX. The iPBX must be powered off before inserting the card. An LH8 card cannot be plugged into AXD and AXL expansion cabinets either.

The LH8 card has the same installation and wiring details as those of the LA8 card (see Section4.14.4.5).

The minimum diameter of the cables has to be 26AWG (0.4mm).



LH8 CARD



PBX_MATRIX_CARTE_LH8-RJ_FAV_01_01

LH8 CARD FRONT PANEL

Figure 4.59 *OVERVIEW OF THE LH8 CARD*

4.14.11 LH16X card

4.14.11.1 Description

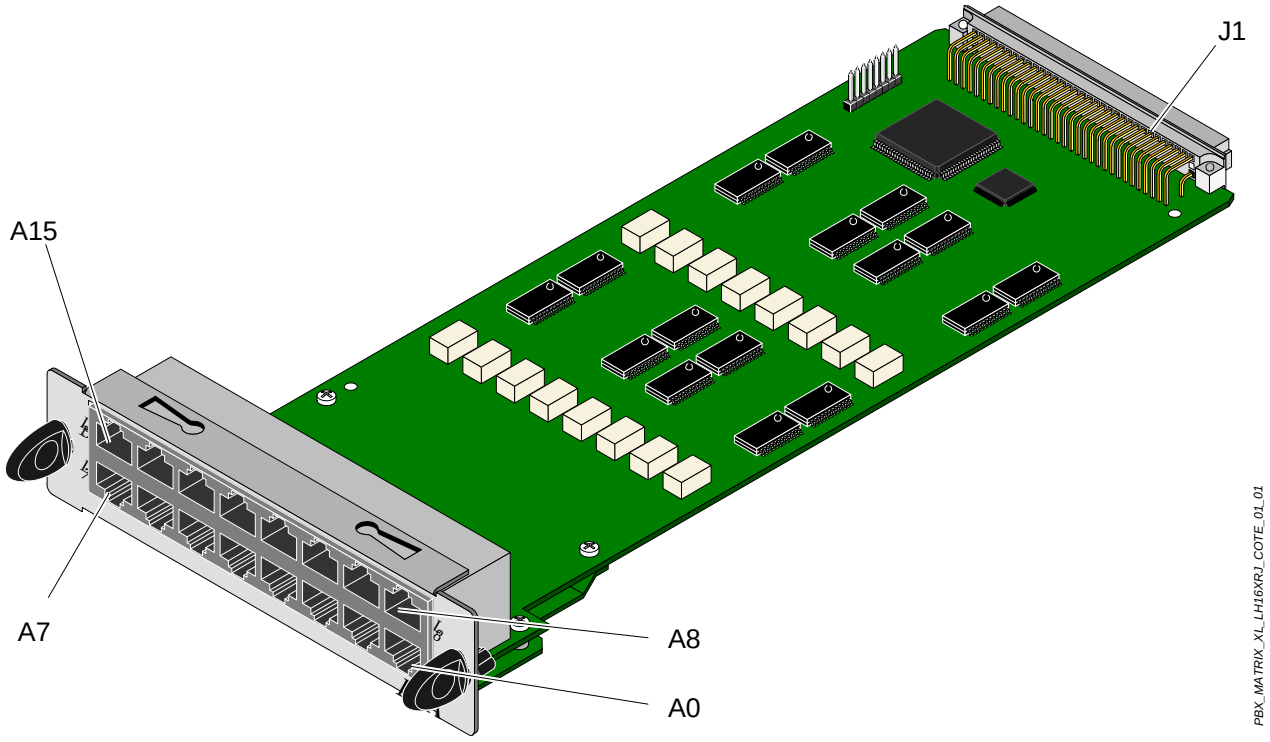
The LH16X card is used to connect 16 analogue hotel terminals to An Aastra XL/XS iPBX.

The LH16X card offers the same features as the LA16X card, plus an extra feature that lights up an LED on sets if messages have been left (for hotel configuration).

4.14.11.2 Functional description

The LH16X card has the same features as the LA16X card (see Section4.14.1.2), plus an extra feature that lights up an LED to inform the user connected that a message has been left (example of use: hotel customer reception).

The LED signal command is sent to the central unit (UCV card), which activates a high voltage current generator built into the card providing the power supply (105 V DC) required for the operation of the lamps on hotel sets.



LH16X CARD

Figure 4.60 *OVERVIEW OF THE LH16X CARD*

4.14.11.3 Physical description (see Figure 4.51)

Connectors

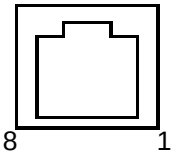
NAME	FUNCTION/CHARACTERISTIC	CONTACTS
J1	96-pin connector: backplane connection	
A0 to A15  	RJ45 connectors: each socket provides one connection to an analogue hotel/motel set	• Pin 4: analogue set (i)+ • Pin 5: analogue set (i)- • Pins 1, 2, 3, 6, 7, and 8: NC

TABLEAU 4.77 DESCRIPTION OF LH16X CARD CONNECTORS

Indicators

This card has no signalling indicator.

4.14.11.4 Hardware configuration

This card has no configuration microswitch.

4.14.11.5 Installation and wiring

The LH16X card can be hot-plugged in an AXD, AXL, AXS or AXS12 iPBX in normal operation.

The LH16X card has the same installation and wiring details as those of the LA16X card (see Section4.14.1.5).

The minimum diameter of the cables has to be 26AWG (0.4mm).

4.14.12 LH16X-8 card

4.14.12.1 Description

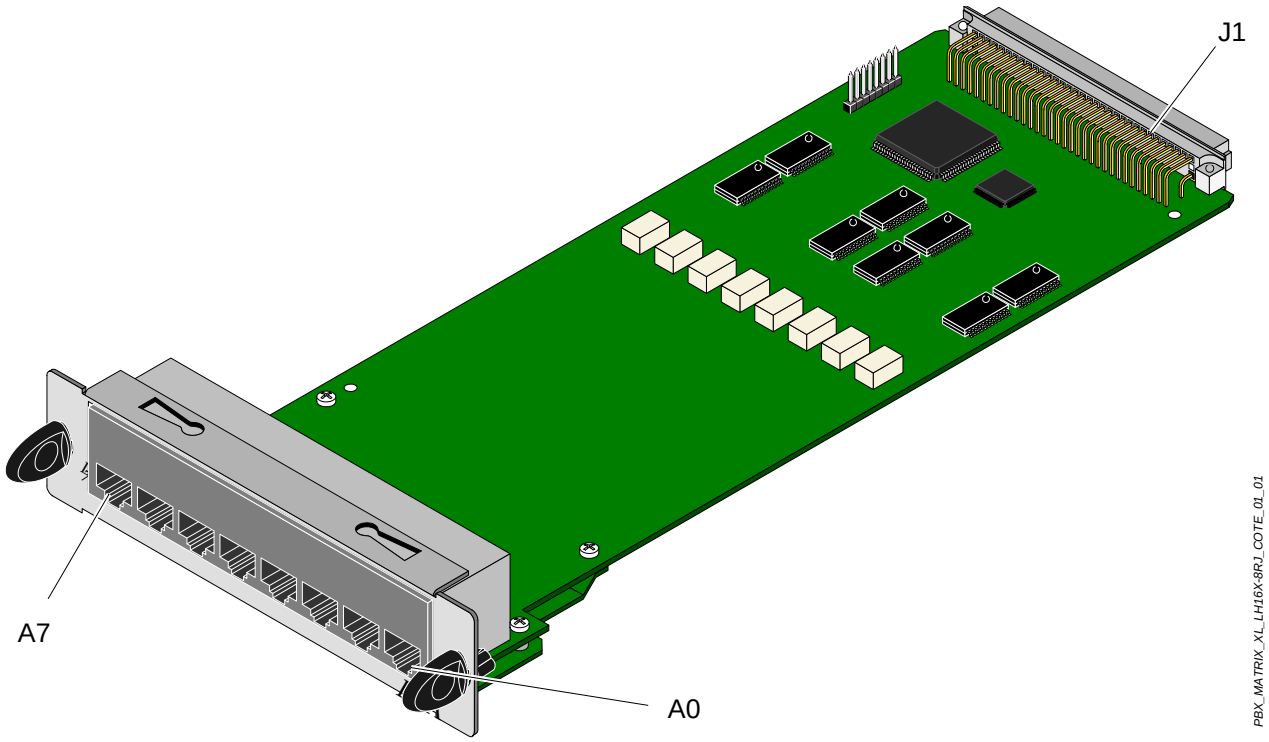
The LH16X-8 card is used to connect 8 analogue hotel terminals to An Aastra XL/XS iPBX.

The LH16X-8 card offers the same features as the LA16X-8 card, plus an extra feature that lights up an LED on sets if messages have been left (for hotel/motel configuration).

4.14.12.2 Functional description

The LH16X-8 card has the same features as the LA16X-8 card (see Section4.14.2.2), plus an extra feature that lights up an LED to inform the user connected that a message has been left (example of use: hotel customer reception).

The LED signal command is sent to the central unit (UCV card), which activates a high voltage current generator built into the card providing the power supply (105 V DC) required for the operation of the lamps on hotel sets.



LH16X-8 CARD

Figure 4.61 *OVERVIEW OF THE LH16X-8 CARD*

4.14.12.3 Physical description (see Figure 4.53)

Connectors

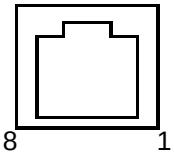
NAME	FUNCTION/CHARACTERISTIC	CONTACTS
J1	96-pin connector: backplane connection	
A0 to A7  	RJ45 connectors: each socket provides one connection to an analogue hotel/motel set	• Pin 4: analogue set (i)+ • Pin 5: analogue set (i)- • Pins 1, 2, 3, 6, 7, and 8: NC

TABLEAU 4.78 DESCRIPTION OF LH16X-8 CARD CONNECTORS

Indicators

This card has no signalling indicator.

4.14.12.4 Hardware configuration

This card has no configuration microswitch.

4.14.12.5 Installation and wiring

The LH16X-8 card can be hot-plugged in an AXD, AXL, AXS or AXS12 iPBX in normal operation.

The LH16X-8 card has the same installation and wiring details as those of the LA16X card (see Section4.14.1.5).

The minimum diameter of the cables has to be 26AWG (0.4mm).

4.14.13 LR4 card

4.14.13.1 Description

The LR4 card enables four analogue trunk lines to be connected.

It can also be fitted with tone detection (DTOC) or billing (FTXA or FTXC) daughter cards.

4.14.13.2 Functional description

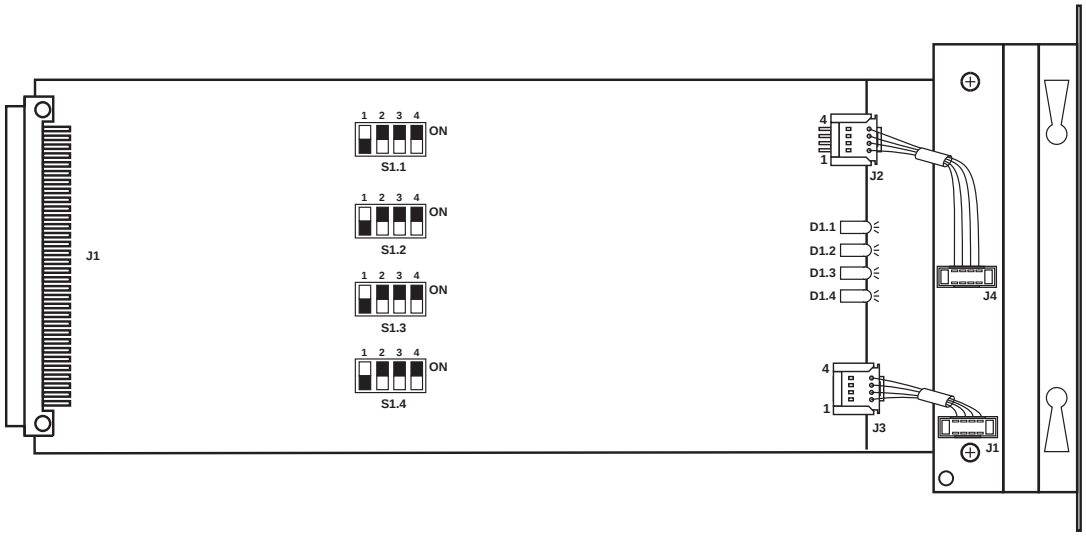
The LR4 card mainly carries out the following functions:

- Analogue line supervision, by:
  - transmitting commands from the central unit to the public network:
    - outgoing call request
    - line off hook and release
    - pulse dialling
  - detection and transmission of actions initiated on the public network to the central processing unit:
    - detection of line off hook on the public network side
    - detection of the public network response to a line off hook on the iPBX side
    - detection of a call signal from the public network
    - detection of the line busy tone: this function is ensured by a daughter card (DTOC card); a DTOC card can be associated with each line.

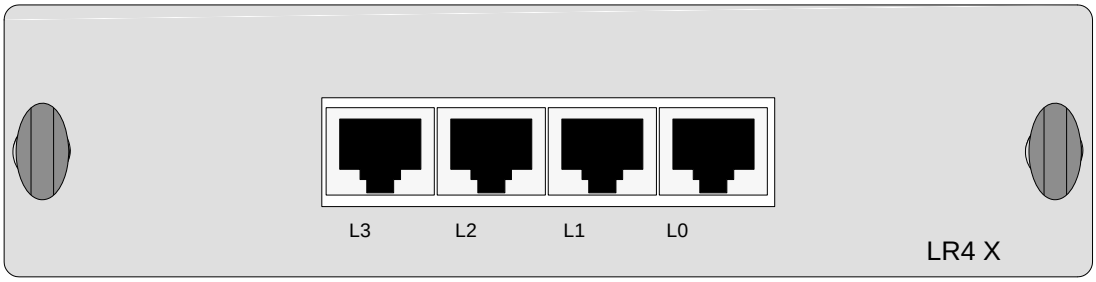
      The release signal (polarity inversion) must be sent by the public exchange; the signal is detected by the LR4 card.

      If the public network does not send this signal, the LR4 card must be fitted with DTOC cards, with one card per line.
    - billing pulse detection: this function is ensured by a daughter card (FTXA card for 50 kHz pulses, FTXC for pulses from 12 to 16 kHz); a billing card can be associated with each line.
- Voice transmission and conversion:
  - in digital form, from the UCV card to the analogue sets

    4 PCM TSs are exchanged with the UCV card, each being the medium for voice carried over an analogue line
  - in analogue form, from the analogue sets to the UCV card.
- Power supply: the card receives several supply voltages on the backplane connector (J1):
  - +5 V, -5 V used for the operation of its internal circuits,
  - -48 V used to supply the short analogue lines connected to PSTN equipment requiring remote supply,



LR4 CARD



LR4 CARD FRONT PANEL

PBX_MATRIX_CARTE_LR4-RJ_FAV_01_01

Figure 4.62 *OVERVIEW OF THE LR4 CARD*

4.14.13.3 Physical description (see Figure 4.62)

Connectors

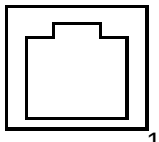
NAME	FUNCTION/CHARACTERISTIC	CONTACTS
J1	96-pin connector: backplane connection.	
J4 to J11	Couples of connectors used for fitting the DTOC, FTXA or FTXC daughter cards, one card per analogue line	
L0 to L3  1	RJ45 connectors: each socket provides one connection to an analogue network line	• Pin 4: network line (i)+ • Pin 5: network line (i)- • Pins 1, 2, 3, 6, 7, and 8: NC

TABLEAU 4.79 DESCRIPTION OF THE LR4 CARD CONNECTORS

Indicators : The indicators are located on the card circuit and not on the front panel.

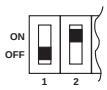
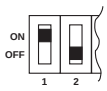
INDICATOR	STATE	EXPLANATION
D1.x (green) (1)	Off On Flashing	Status of line x (1) : • Line idle • Line used • Pulse dialling rate

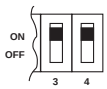
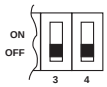
(1) x: INDICATOR number, each INDICATOR is assigned to a network line

TABLEAU 4.80 PRESENTATION OF THE LR4 CARD INDICATORS

4.14.13.4 Hardware configuration

Four “S1” micro-switches are used to configure the line balance and type of gain for each standard network line (LS) or short network line (LC).

S1.X.1	S1.X.2	SWITCH	LINE IMPEDANCE
OFF	ON		Complex impedance (factory setting)
ON	OFF		Impedance 600 Ω

S1.X.3	S1.X.4	SWITCH	GAIN
ON	ON		Standard line gain, usable for 1.5 to 3.5 km (factory setting)
OFF	OFF		Short line gain, usable for 0 to 1.5 km

* ■ Represents the microswitch.

(1) “x” represents the microswitch number (1 to 4).

TABLEAU 4.81 CONFIGURATION OF THE S1 MICROSWITCH ON THE LR4 CARD

Two “S2” microswitches are used to configure the billing frequency on a card fitted with FTXC daughter cards.

S2.1	S2.2	SWITCH	CHARGING FREQUENCY
OFF	OFF		12 kHz
ON	ON		16 kHz

* ■ Represents the microswitch.

TABLEAU 4.82 CONFIGURATION OF THE S2 MICROSWITCH ON THE LR4 CARD

The DTOC daughter cards are fitted with:

- switches used to configure the card to suit the tones used in different countries. These iPBXs are factory pre-set.
- a micro-switch used to change the sensitivity of the DTOC card.

DESIGNATION	CONFIGURATION (1)
Detection threshold [dBm]: • **-3 to -25 dBm** • -3 to -32 dBm	 **CA1.4 on OFF** CA1.4 on ON

(1) Factory delivery configuration in bold characters.

The FTXA and FTXC daughter cards are not fitted with microswitches.

The hardware configuration required for installing the FTXC card is implemented from the S2 microswitch on the LR4 card (see Tableau 4.82).

4.14.13.5 Installation and wiring

Caution: *Activating a card connected to an RTCP network requires special programming on Aastra Management Portal.*

The LR4 card must be configured according to the length of the wiring (see Tableau 4.81).

These cards must be connected with cable No. HG4731.

4.14.14 LI1 card

4.14.14.1 Description

The LI1 card allows you to connect together 2 private iPBXs through a direct analogue or public network line.

The interface described supports the exchange protocols required for the following links:

- DID link with COLISEE type public PBXes,
- links to other "LO" type private installations,
- specific links with WINK-START type manufacturer protocols, etc.

Several types of signalling can be used:

- COLISEE pulse signalling for connection to the COLISEE network
- COLISEE pulse signalling in master or slave mode for connection to another private installation,
- MF SOCOTEL pulse and state-change line signalling for connection to the COLISEE network,
- L0 pulse signalling for connection to another private installation,
- ATT WINK START signalling for connection to another private installation,
- RITTER signalling for connection to another private installation.

4.14.14.2 Functional description

The LI1 card mainly carries out the following functions:

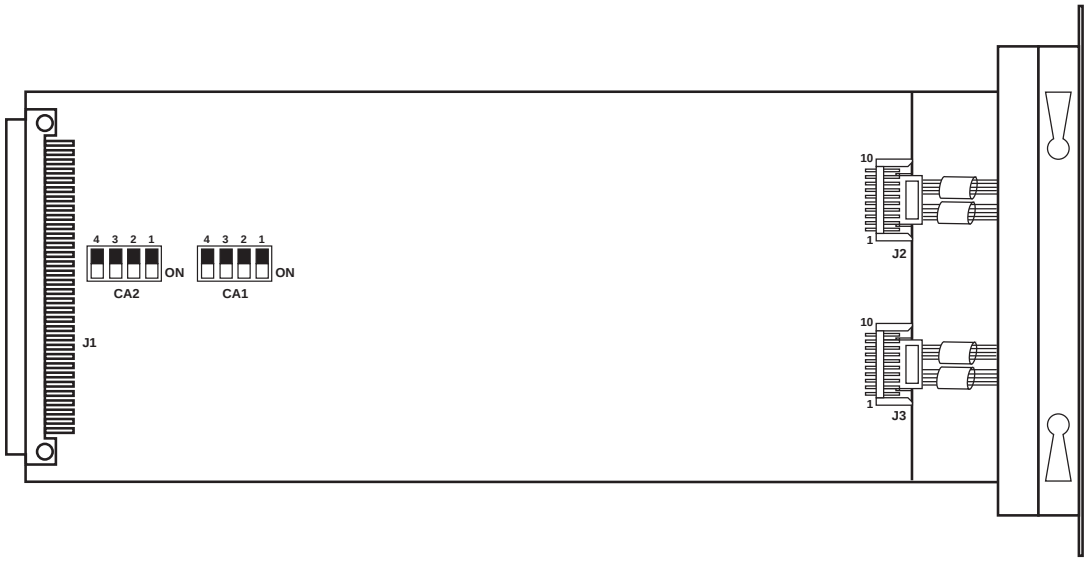
- Integration of TL command signals from the UCV card:
  - line seizure
  - release
  - pulse dialling

- Voice transmission and conversion:
  - in digital form, from the UCV card to the analogue sets.

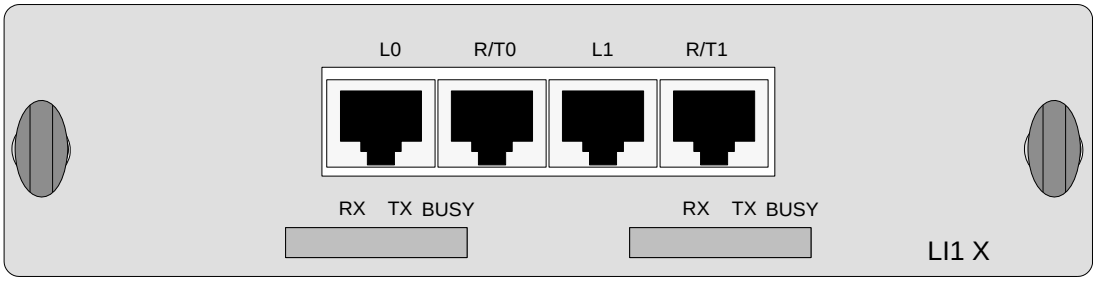
    The PCM TSs exchanged with the UCV card are the medium for voice carried over a tie line.
- in analogue form, from the analogue sets to the UCV card.

Information can be transmitted:

- either using RON/TRON signals,
- or an alternate current. The card has a 50 Hz current generator for this purpose,
- Power supply: the LI1 card receives several supply voltages on the backplane connector (J1):
  - +5 V, -5 V used for the operation of its internal circuits,
  - -48 V used for the operation of its internal circuits.



LI1 CARD



LI1 CARD FRONT PANEL

PBX_MATRIX_CARTE_LI1-RJ_FAV_01_01

Figure 4.63 *OVERVIEW OF THE LI1 CARD*

4.14.14.3 Physical description (see Figure 4.63)

Connectors

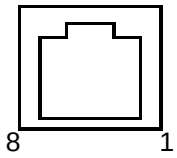
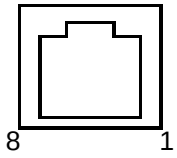
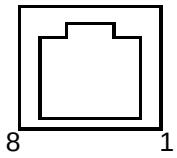
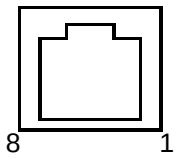
NAME	FUNCTION/CHARACTERISTIC	CONTACTS
J1	96-pin connector: backplane connection	
L0  	RJ45 connector: carries voice over an analog TL 0	• Pin 3: LRB0 • Pin 4: LRA0 • Pin 5: LERB0 • Pin 6: LERA0
L1  	RJ45 connector: carries voice over an analog TL 1	• Pin 3: LRB1 • Pin 4: LRA1 • Pin 5: LERB1 • Pin 6: LERA1
R/T0  	RJ45 connector: carries signaling over an analog TL 0	• Pin 2: T01 • Pin 3: R01 • Pin 4: R00 • Pin 5: TB00 • Pin 6: TA00 • Pin 7: GNDL
R/T1  	RJ45 connector: carries signaling over an analog TL 1	• Pin 2: T11 • Pin 3: R11 • Pin 4: R10 • Pin 5: TB10 • Pin 6: TA10 • Pin 7: GNDL

TABLEAU 4.83 DESCRIPTION OF LI1 CARD CONNECTORS

Indicators

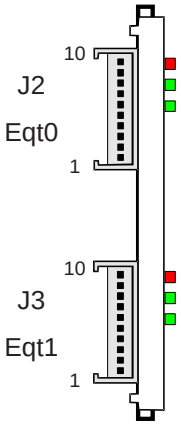
CONNECTOR INDICATORS		NAME Card	STATE	EXPLANATION
L0/RT0		**RX** **TX** **BUSY**	Red Green Green	Status of the line: • circuit busy • circuit in transmit mode • circuit in receive mode
L1/RT1		**RX** **TX** **BUSY**	Red Green Green	Status of the line: • circuit busy • circuit in transmit mode • circuit in receive mode

TABLEAU 4.84 PRESENTATION OF THE LI1 CARD INDICATORS

4.14.14.4 Hardware configuration

DESIGNATION	CONFIGURATION (1)(2)
Commissioning the line • **TL operating** • TL disabled	**CAx.1 on OFF** CAx.1 on ON (not used)
Type of gain: • **Standard line (1.5 to 3.5 km)** • Short line (0 to 1.5 km)	**CAx.2 on OFF** CAx.2 on ON
Signaling type: • **E/M** • 50 Hz	**CAx.3 on OFF** CAx.3 on ON
Transmission to equipment over 2 or 4 wires: • **2-wire** • 4-wire	**CAx.4 on OFF** CAx.4 on ON

(1) Factory delivery configuration in bold characters.

(2) “x” is the microswitch number:

- CA1 microswitch associated with the link assigned to L1/RT1 connectors
- CA2 microswitch associated with the link assigned to L0/RT0 connectors

TABLEAU 4.85 CONFIGURING THE LI1 CARD

4.14.14.5 Installation and wiring

The LI1 card is used to link together 2 iPBXs through an analogue TL. These analogue TLs are wired using either two or four wires:

- with a two-wire TL, voice communications are carried in both directions on the same pair (LA and LB) by overlapping electrical states.
- with a four-wire TL, one pair is dedicated to reception and the other pair to transmission.
- The minimum diameter of the cables has to be 26AWG (0.4mm).

4.14.14.6 Installing and wiring an LI1 card

A connector lead with the reference HG4661 simplifies wiring analogue TLs on the LI1 card.

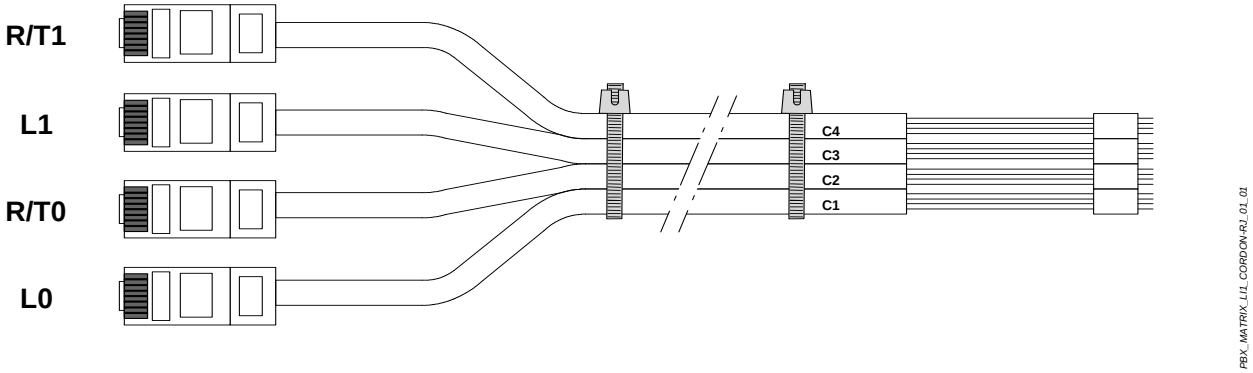
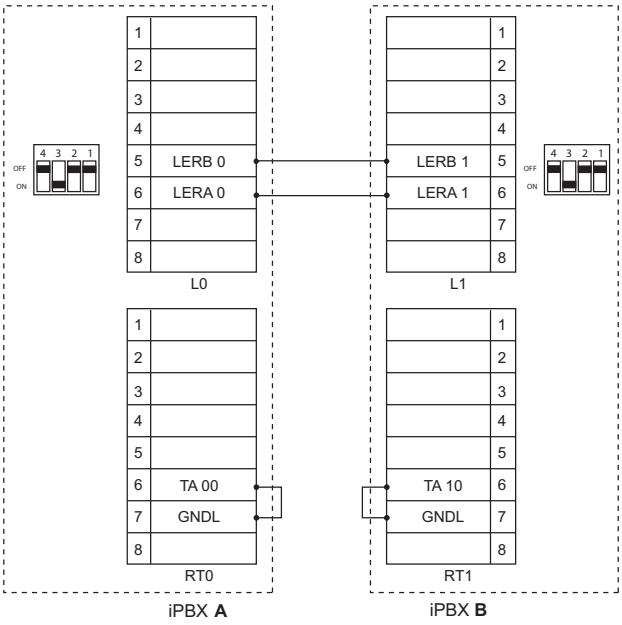


Figure 4.64 *LI1 CABLE*

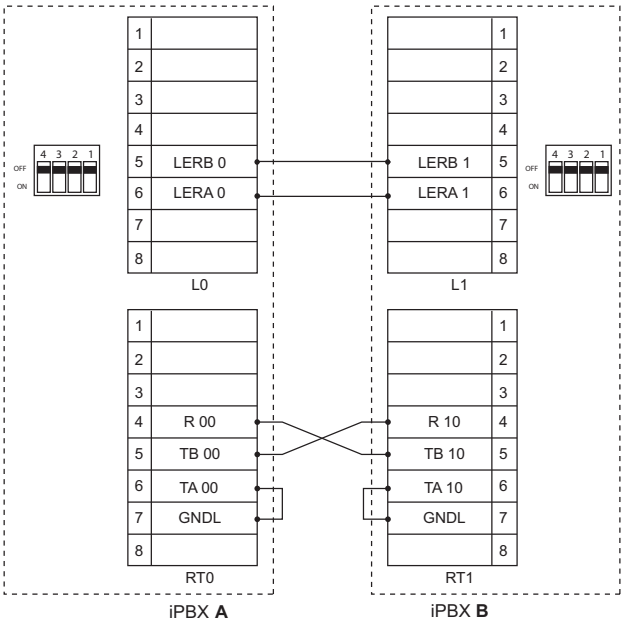
COLOUR	WIRE	SIGNAL	DESCRIPTION	CONNECTOR/ EQUIPMENT
white	1	NC	"Voice"	L0 (RJ45)/ Equipment 0
blue	2	NC		
white	3	LRB0		
orange	4	LRA0		
white	5	LERB0		
green	6	LERA0		
white	7	NC		
brown	8	NC		
white	1	NC	"Signalling"	L0 (RJ45)/ Equipment 0
blue	2	T01		
white	3	R01		
orange	4	R00		
white	5	TB00		
green	6	TA00		
white	7	GNDL		
brown	8	NC		
white	1	NC	"Voice"	L1 (RJ45)/ Equipment 1
blue	2	NC		
white	3	LRB1		
orange	4	LRA1		
white	5	LERB1		
green	6	LERA1		
white	7	NC		
brown	8	NC		
white	1	NC	"Signalling"	L1 (RJ45)/ Equipment 1
blue	2	T11		
white	3	R11		
orange	4	R10		
white	5	TB10		
green	6	TA10		
white	7	GNDL		
brown	8	NC		

TABLEAU 4.86 WIRING THE LI1 CABLE



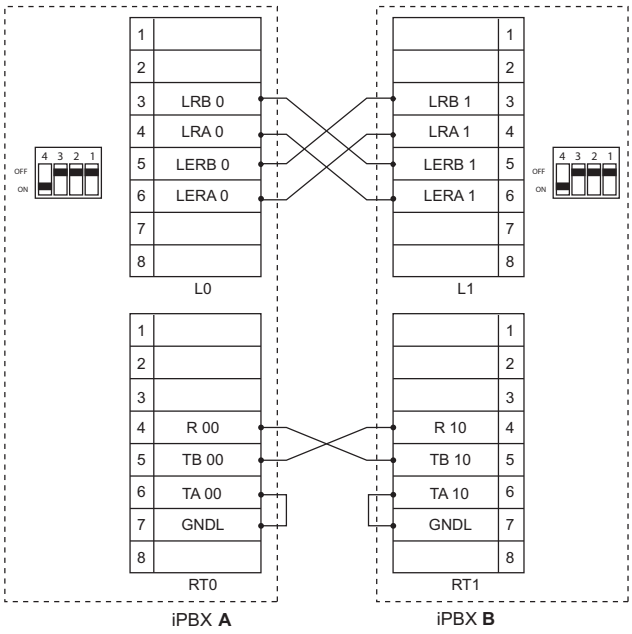
* ■ Represents the microswitch.

Figure 4.65 *WIRING A 50 HZ 2-WIRE ANALOGUE TL*



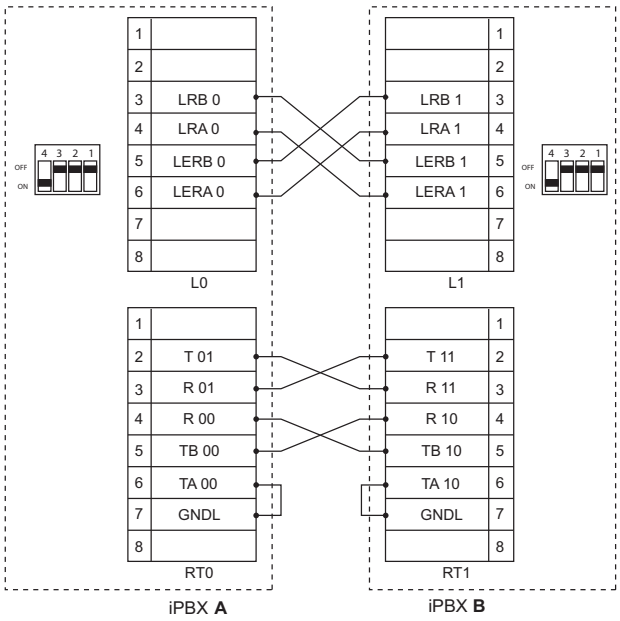
* ■ Represents the microswitch.

Figure 4.66 *WIRING A 2-WIRE+E&M ANALOGUE TL*



* ■ Represents the microswitch.

Figure 4.67 *WIRING A 4-WIRE+E&M ANALOGUE TL*



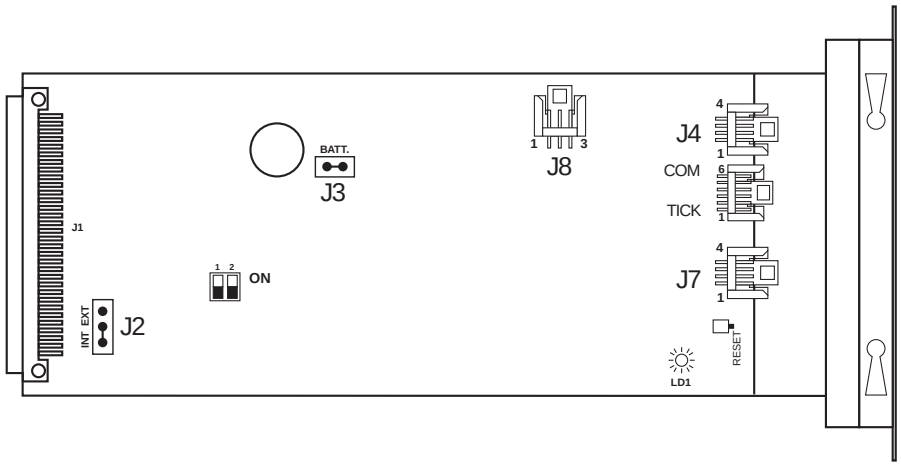
* ■ Represents the microswitch.

Figure 4.68 *WIRING A 4-WIRE+E&M ANALOGUE TL*

4.14.15 BTX card

4.14.15.1 Description

This charging buffer card is used to print detailed telephone traffic reports.



BTX CARD

BTX CARD FRONT PANEL

Figure 4.69 *OVERVIEW OF THE BTX CARD*

4.14.15.2 Functional description

The BTX card is used to record, store, sort, and edit on request, from a set with interactive keys, by issuing Room status tickets.

4.14.15.3 Physical description (see Figure 4.50)

Connectors

NAME	FUNCTION/CHARACTERISTIC	CONTACTS
J1	96-pin connector: Backplane connection	
J8	Stocko 3-pin connector: External buffer power supply	• Pin 1: GND • Pin 3: +12 V
PRN	RJ45 connector: connection to a PC or printer	• Pin 1: TX • Pin 2: RX • Pins 3,4,5 and 6: GND • Pin 7: CTS • Pin 8: RTS
CHARGE	RJ45 connector: link with printer port on UCV card (ticket serial port)	• Pin 1: RD • Pins 3,4,5 and 6: GND • Pin 7: DTR
MMI	RJ45 connector: link with operating port on UCV card (MMC serial port, optional)	• Pin 1: TD • Pin 2: RD • Pins 3,4,5 and 6: GND
ALA	RJ45 connector: relay contact	• Pin 1: Line B • Pin 2: Line B • Pin 3: not used • Pin 4: not used

TABLEAU 4.87 DESCRIPTION OF THE BTX CARD CONNECTORS

Indicators

NAME	STATE	EXPLANATION
LD1	On steady (green) On green/red alternating Green flashing Red flashing	Normal buffer operation iPBX data received on the serial ticket port Pre-alarm: 80 % total memory used Alarm: 95 % total memory used

*LD1 located on the card circuit (and not on front panel)

TABLEAU 4.88 PRESENTATION OF THE BTX CARD INDICATORS

Jumpers

NAME	FUNCTION
J2	• Set INT side: indicates buffer power supplied by the iPBX • Set EXT side: indicates buffer power supplied by connector J8 (external supply)
J3	• If set, indicates memory power supplied by the buffer battery

TABLEAU 4.89 PRESENTATION OF THE BTX CARD JUMPERS

5 Presentation of peripheral devices

5.1 Digital sets

5.1.1 Overview

Aastra XS/XL/XD iPBXs allow the connection of digital sets. Only Aastra digital sets are accepted by the iPBXs.

Digital sets can manage notably:

- An alphanumeric screen
- Programmable keys
- An internal directory
- A user-friendly navigator
- On-hook dialling
- Display of caller's name
- A call log
- Set locking
- Direct callback from the call log
- Loading and saving of directories, logs, and the set's parameters.

Digital sets are connected to iPBXs through the following cards:

For the AXS iPBX

- EXT1-S: 8 digital sets can be connected.
- EXT1-S12: 4 digital sets can be connected.
- EXT1-S6: 2 digital sets can be connected.

For AXS/AXL/AXD iPBXs

- LN16X: 16 digital sets can be connected.
- LN16X-8: 8 digital sets can be connected.
- LN8: 8 digital sets can be connected.
- LM8: 4 digital sets connectable.

5.1.2 INSTALLATION

The various characteristics (connections, wiring, etc.) relating to the installation of digital sets are described in the sections dealing with these cards (see section 4.7, 4.9 and sections 4.14.5 to 4.14.9).

5.2 Analogue sets

5.2.1 Description

Aastra XS/XL/XD iPBXs accept the connection of analogue sets of all types and makes.

Analogue sets are connected to the iPBXs through the following equipment cards:

For the AXS iPBX

- EXT1-S: 8 analogue sets can be connected.
- EXT1-S12: 8 analogue sets can be connected.
- EXT1-S6: 4 analogue sets can be connected.

For AXS/AXL/AXD iPBXs

- LA16X 16 analogue sets connectable,
- LA16X-8 8 analogue sets can be connected.
- LA8 8 analogue sets can be connected.
- LH8 8 analogue sets can be connected.
- LH16X 16 analogue sets can be connected.
- LH16X-8 8 analogue sets can be connected.
- LM8 4 analogue sets can be connected.

5.2.2 INSTALLATION

The various constraints (connections, wiring, etc.) concerning the installation of analogue sets are described in the sections dealing with these cards (see Sections 4.14.2, 4.14.4, 4.14.9 and 4.14.12).

5.3 IP sets

5.3.1 Description

Aastra XS/XL/XD iPBXs allow the transmission of voice signals with an IP set.

IP sets have the same features as traditional digital sets (see Section 5.1.1). In addition, upgrade to IP brings numerous advantages:

- A single network socket is enough for both the PC and telephone.
- No interface card is required on the IP set.
- Switching is performed live over the LAN.
- Geographical location is no longer a constraint (teleworking, independent set, etc.).

5.3.2 INSTALLATION

Connecting IP sets to an iPBX implies that this latter be fitted with:

- A PT2 card (Ethernet network interface card) fitted with a VoIP daughter card (see Section 4.4.3), and/or
- An EIP daughter card (8/32 channels) on the UCV card.

IP sets communicate with an iPBX through an Ethernet LAN. Connection to the LAN is via a standard Ethernet cable with an Ethernet 10/100 Base-T connector on an Ethernet hub or switch.

Follow the steps below to programme an IP set:

- Unlock the IP TERMINALS function (see section 1.3, Document [1]).
- Activate the IP card (see section 1.3, Document [1]).
- Create logical subscribers (see section 1.3, Document [1]):
  - for an i7xx set, create at least one "general IP DS" logical subscriber and one "IP DS" logical subscriber,
  - for an Aastra Softphone i2052, create a "Software phone on PC" set.

For more detailed information on installing and starting IP sets, refer to the following documents:

- i7xx IP sets: see section 1.3, Document [15]
- Aastra Softphone i2052: see section 1.3, Document [9].

Some sets require connection to the Ethernet network of a PC fitted with software for configuring IP equipment.

5.4 Computer terminals

5.4.1 Description

An iPBX can communicate with computer terminals:

- Data transmission equipment (DTE)
- Data communications equipment (DCE) (modem).

This communication is possible on iPBXs fitted with:

- CS1 cards, for connection in packet mode via an X25 network
- CA1 cards, for connection to an asynchronous data terminal through an RS232 link.

5.4.2 INSTALLATION

The various characteristics (connections, wiring, etc.) relating to the installation of computer terminals are described in the Sections dealing with the CS1 and CA1 cards (see Sections4.13.6 and 4.13.6.6).

5.5 Attendant consoles (ATDC)

5.5.1 Description

An attendant console is dedicated to call reception and distribution. In general, the operator can supervise all extensions in the network and has access to maintenance terminal data (alarm management, calendar management, time management). There are two types of operation:

- Class A: monitoring all extensions and trunks (reduced configuration)
- Class B: Monitoring the management of an ongoing call.

An attendant console can be either a digital set with programmable keys (for example, an M760) or an attendant console on PC (for example, an Aastra i2070 Software Attendant Console).

Aastra XS/XL/XD iPBXs support at most 8 ATDCs (6 Windows ATDCs max).

5.5.2 INSTALLATION

The various characteristics (connections, wiring, etc.) relating to the installation of digital sets are described in the sections relating to these cards (see section 4.14.5 to 4.14.9). For more detailed information on configuring and installing an M760 set, see section 1.3, document [8].

The various characteristics (connections, wiring, etc.) relating to the installation of ATDCs on PC are described in the corresponding installation manuals (see section1.3 Document [10] for the i2070).

5.6 Miscellaneous equipment

5.6.1 External music source

5.6.1.1 Description

The music used while a call is put on hold and as background music can be supplied by any music on-hold device with an audio output.

5.6.1.2 INSTALLATION

Once connected to the UCV or IUCV-D card, the external music source must be selected as music on-hold from Aastra Management Portal (see Document [1]).

The volume of the music source can also be adjusted from Aastra Management Portal.

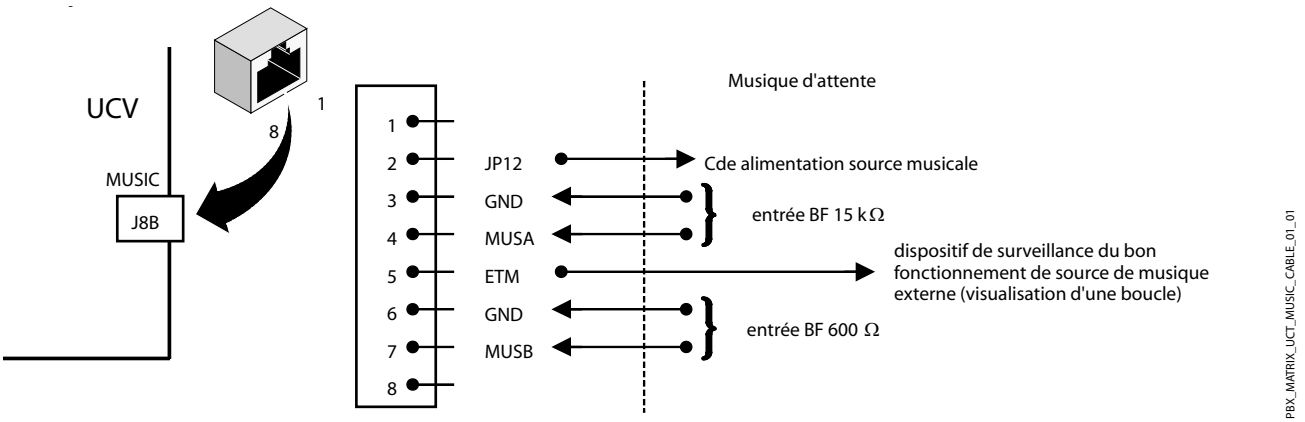


Figure 5.1 EXTERNAL MUSIC / UCV wiring

Nota : *Make a loop between GND (3) and ETM (5) to check that the external music is present.*

5.6.2 Common bell

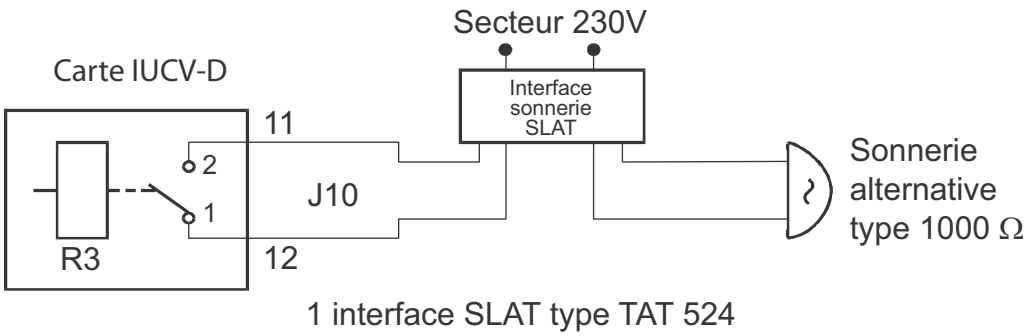
5.6.2.1 Overview

The iPBX has a restricted night service relay on its (UCV and IUCV-D) CPU card which allows the connection of a telephone set or any type of ringing device. This device switches the relay on the UCV and IUCV-D card in the event of an incoming call which is answered or not answered, depending on the required type of operation (call handling programming).

The common bell has its own directory number (by default 798).

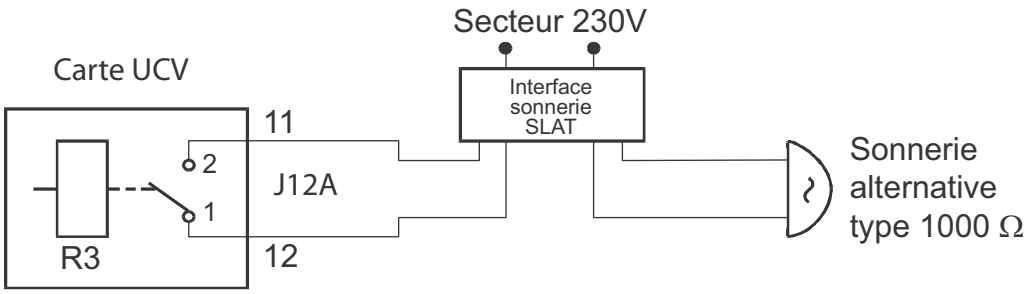
5.6.2.2 Installation

Common bell setup requires no programming. It is implemented when you power on the system.



1 interface SLAT type TAT 524
La sonnerie d'alarme est commandée par le relais R3
Il est mis à votre disposition un contact sec sur J10 (courant max : 1 A)

Figure 5.2 CONNECTING A COMMON BELL (IUCV-D CARD)



1 interface SLAT type TAT 524
La sonnerie générale est commandée par le relais R3
Il est mis à votre disposition un contact sec sur J12A (courant max 1A)

Figure 5.3 CONNECTING A COMMON BELL (UCV CARD)

5.6.3 Alarm bell

5.6.3.1 Description

The iPBX's CPU card (UCV and IUCV-D) includes a relay used to connect an alarm bell. This relay is triggered by a problem detected on the synchronisation clock selected by the system. Alarms are assigned by MMC (AXD)

5.6.3.2 Installation

Alarm bell setup requires no programming. It is implemented when you power on the system.

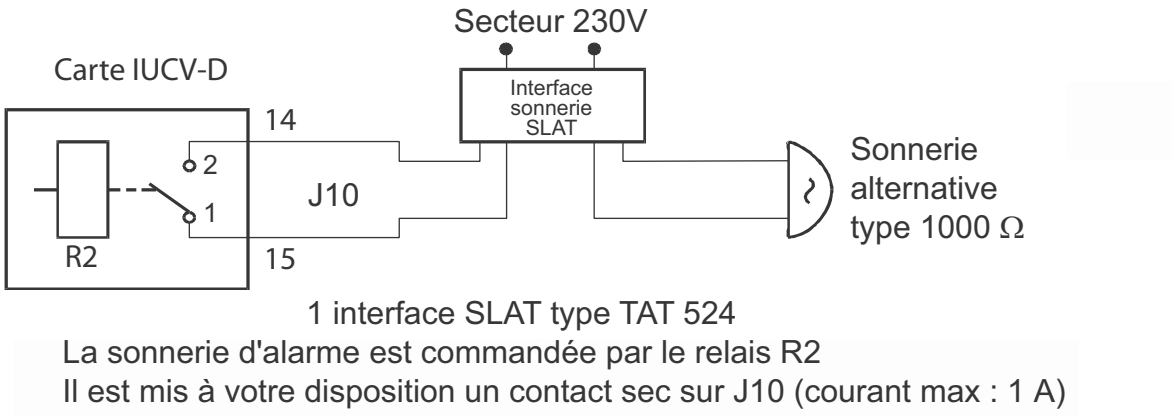


Figure 5.4 CONNECTING AN ALARM BELL (IUCV-D CARD)

R2: degraded operation alarm or synchronisation clock alarm relay

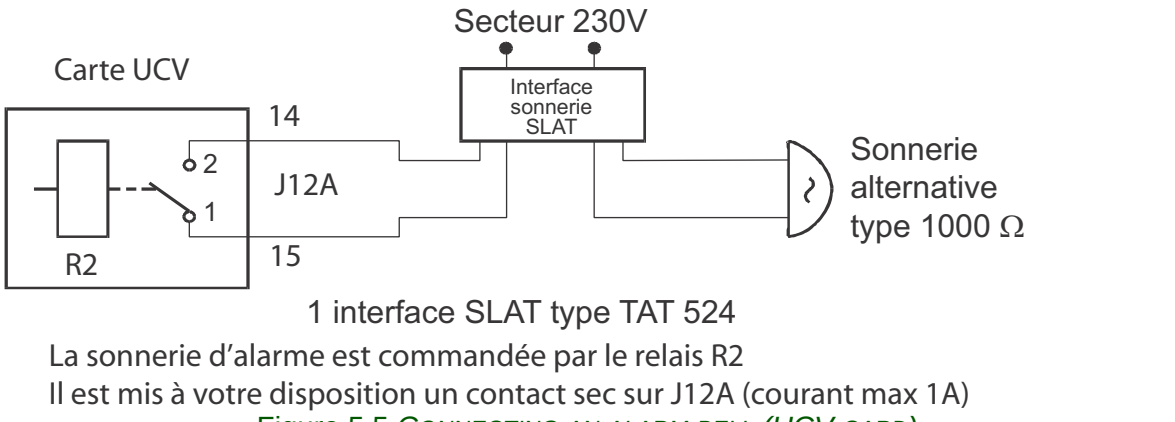


Figure 5.5 *CONNECTING AN ALARM BELL (UCV CARD)*

6 INSTALLATION AND ACTIVATION

6.1 Introduction

6.1.1 Security guidelines

6.1.1.1 Staff authorisation

Only qualified staff may work on the iPBX.

The installer must be aware of the possible electrical hazards to which they may be exposed.

It is essential to take every precaution necessary for people's safety.

6.1.1.2 Safety

	The iPBX is grounded for safety reasons and this connection must be made before any others (see Figure 3.1 in Section 3 for the cabinets' earth connection.

The iPBXs are powered up by the 230 V or 115 V, 50 Hz or 60 Hz mains or an optional external battery.

The power supply module is protected by fuses located on the mains socket.

	Safety of energy distribution Apply the usual precautions relating to mains power supply. **In case of danger, disconnect the power supply cable.** **High leakage currents** In the event of a power line fault near telephone lines, service technicians must be aware of the possibility of high leakage currents on metal system surfaces. Leakage currents normally flow safely through the power cable to protective ground. Isolate the telephone network lines before any intervention on the iPBX. **Lightning overvoltages** Transient overvoltages due to lightning can be conveyed by the supply cables and telephone lines of the installation: • The electrical power supply installation of the room must be protected against lightning-generated overvoltages coming from the power supply network. • The telephone installation must be protected against lightning-generated overvoltages by inserting protection modules between the PSTN and the distribution frame.

6.2 Operations concerning a new installation

There are several types of operations on a new installation site:

Hardware operations:

- Installing cabinets
- Handling cards.

Software operations:

- Starting and presetting the installation
- Accessing Aastra Management Portal (User interface).
- Massive import from the massive creation form.

6.2.1 Preliminary operations

6.2.1.1 Site inspection

To ensure that the system has the correct conditions to function properly, check the site before you start installing the iPBX.

Here is a list of points to check:

- Location
- Environment
- Space requirement
- Electrical installation.

6.2.1.2 Location

- Unpacking, installation, operation, service, and storage

  The location must be large enough to host the iPBX and a worktable. This table will be used to install a telephone set, a management console, and all the other peripheral equipment.

- Main distribution frame and battery

  Check that there is sufficient space for the switching rack and battery no more than 4 meters from the iPBX cabinet. Both 5 m and 10 m RJ45 connection cables are available.

  Follow the supplier's instructions concerning the location of the battery.

- Minimum clearance

  A minimum clearance is required for air circulation:

  - 55 mm on the left side and at the back for AXD, AXL, AXS, AXS12 and AXS6

cabinets.

Also check that there is enough room above an AXS, AXS12 and AXS6 cabinet to open it.

- Electrical devices

  There must be a minimum distance of 4 m (13 ft) from equipment such as photocopiers, electric motors, and other equipment that can produce electromagnetic or radio-frequency interference.

- Fire precautions

  A fire extinguishing system, for example, a carbon dioxide system, needs to be in the room.

6.2.1.3 Environment

- General conditions

  The room should be clean, dry, and well-ventilated to allow free airflow.

- Temperature

  The temperature of the room must be controlled, and kept between 5 °C (41 °F) and 40 °C (104 °F).

- Humidity

  The degree of non-condensing humidity in the room must remain between 10 % and 80 %. Humidity rate must not exceed 30 % per hour during operation.

6.2.1.4 Space

The space must be sufficient to fit the iPBXs to the wall (AXS, AXS12 and AXS6 only) or install:

- A rack for installing 19 inch cabinets, if not pre-installed
- A work table for peripheral equipment.

When installing inside a rack, the rack must be large enough to install the external backup battery.

For future expansion of the iPBX, it is advisable to reserve some space in the rack for a second cabinet.

6.2.1.5 Earth connection

Connect the cabinets' earth connectors (see Figure 3.1) to the security earthing system via a 16 mm2 yellow/green cable.

6.2.1.6 Electrical power supply

On the installation site, provide one socket for each cabinet (main and extension), and one socket for the administration console.

Each socket must support the nominal voltage of 230 V CA (or 115 V depending on type of installation) in 50 Hz/60 , the current intensity of 10/16 A and must have a third earthing conductor to ensure protection against discharges, electric shocks, and to avoid electromagnetic interference. The power outlets installed must comply with the standard NF C-15100.

Make sure there are sufficient sockets for other equipment as required.

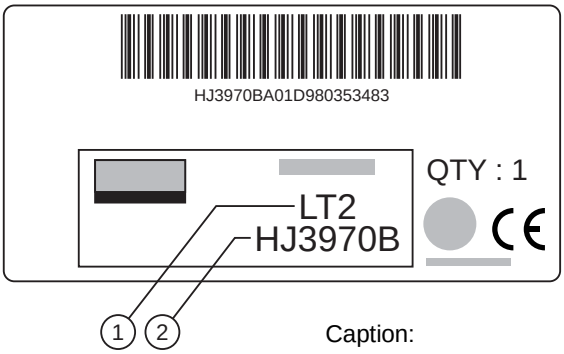
Nota : *Do not use an extension cable between the power source and the iPBX power supply module(s).*

	Risk of fire and electrical shock To protect against risk of fire and electrical shock: • make sure there are no screws, tools, or any metal items inside the cabinets. • make sure the system is connected to a socket with an grounding conductor. For the safety of the installers, the iPBX must be connected to a 3-wire power point connected to the general ground of the building. • Use only three-conductor (male and female) connectors: two phase conductors and one grounding conductor.

6.2.1.7 Equipment identification

Equipment for the new system is delivered in individual boxes. To complete a checklist of the delivered equipment, look for the package labelling and enter this information.

An example of the labelling on the packages is given below:



Caption:

1- Product description

2- Product sales code

6.2.2 Installing an AXD cabinet

The various installation options of an AXD cabinet are given in the following table:

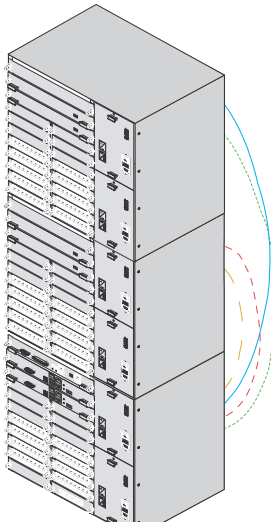
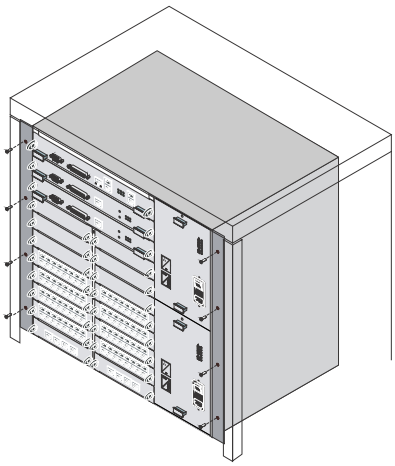
CABINET	STACKED	INSIDE A CABINET	ON A WALL
AXD	(1) 	With mounting kit: 1 flush position 	Not

TABLEAU 6.1 OPTIONS FOR INSTALLING AN AXD CABINET

(1) The cabinets in an A2XD or A3XD version can be placed on a piece of furniture, on top of one another.

A minimum clearance is required for air circulation: 55 mm on the left-hand side and at the back of an AXD cabinet.

Read the environmental constraints described in section 6.2.1.3.

Hardware required

- 1 mounting kit (2 brackets + 8 screws)
- Screws and captive nuts for fitting in a rack

Positioning on a piece of furniture

- Place the cabinet in position.

Installation in a rack

Table 1:

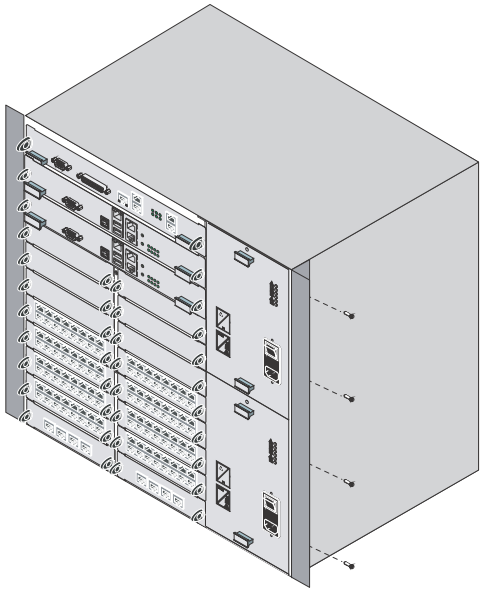
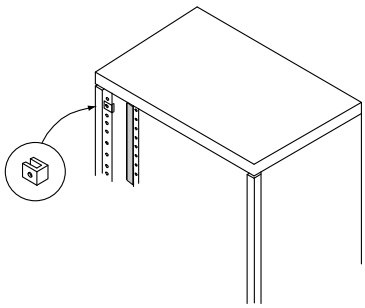
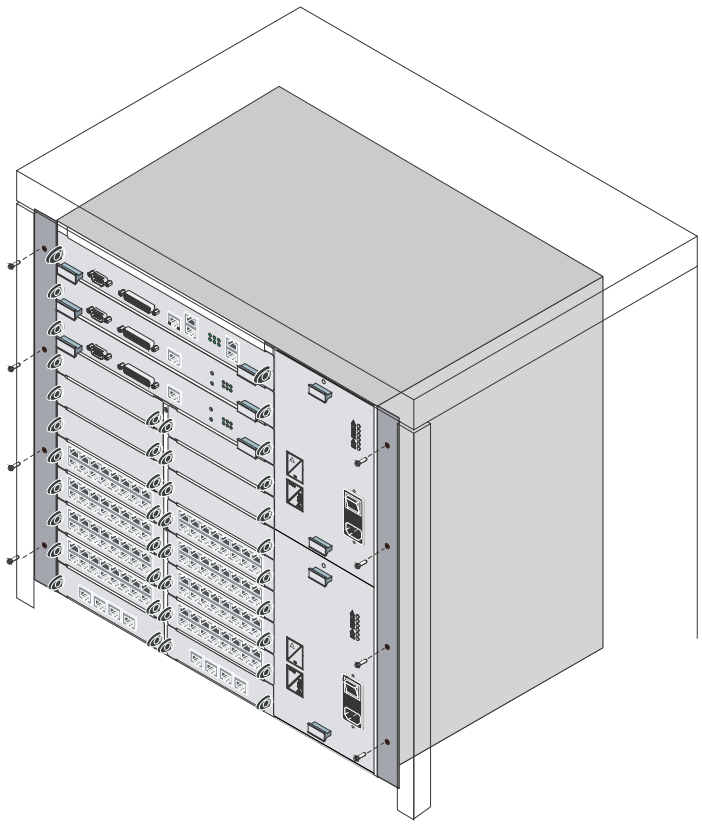
OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Fit the securing brackets on the sides of the cabinets using the screws supplied (4 per bracket).	• The brackets offer only one mounting option: flush with the front panel of the rack 
• Identify the position in the rack where the cabinet is to be installed. On the brackets on which the cabinet is to be fitted, install the captive nuts on the holes selected.	
• Lift the cabinet and align the bracket attachment holes with those of the rack.	

Table 1:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Fix the securing brackets on the rack using screws.	

6.2.3 Installing a cabinet (AXL, AXS, AXS12 and AXS6)

The various installation options of an Aastra XS/XL cabinet are given in the following table:

CABINET	STACKED	INSIDE A CABINET	ON A WALL
AXS/AXS12/ AXS6	(1) (2)	With 2-position mounting kit: • Flush position	Vertically 3)
AXL	(2)	With 2-position mounting kit (flush and recessed)	Not

TABLEAU 6.2 OPTIONS FOR INSTALLING A CABINET

1) If laid on a piece of furniture, a CPU and a PC console may be superimposed in the AXS, AXS12 or AXS6 cabinet.
2) The cabinets in an A2XS, A2XL or A3XL version can be placed on a piece of furniture, on top of one another.
3) When mounting a cabinet on a wall (AXS, AXS12 or AXS6), the front panel of the cabinet can face upwards or downwards. However, we recommend turning it upwards.

A minimum clearance is required for air circulation:

- 55 mm on the left and right side for AXS, AXS12 and AXS6 cabinets.

Read the environmental constraints described in section 6.2.1.3.

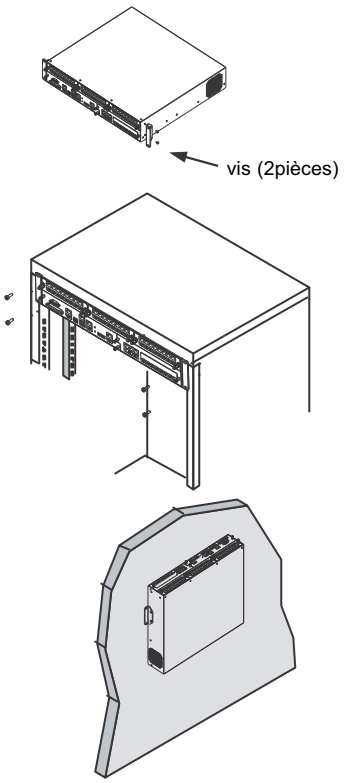
Hardware required

- 1 mounting kit (2 brackets + 4 screws)
- 4 pins and 4 securing screws for wall mounting
- Screws and captive nuts for fitting in a rack

An AXS, AXS12 or AXS6 cabinet can be installed:

- **Stacked**
  - Place the cabinet in position.
- **Inside a rack**
  - Fit the securing brackets on the sides of the cabinets using the screws supplied (2 per bracket).
  - Identify the position in the rack where the cabinet is to be installed. On the brackets on which the cabinet is to be fitted, install the captive nuts on the holes selected.
  - Lift the cabinet and align the bracket attachment holes with those of the rack.
  - Fix the securing brackets on the rack using screws.
- **On a wall**
  - Mark the drill points on the wall using the drilling template supplied with the mounting kit.
  - Drill the holes. Insert the wall plugs adapted to the type of wall.
  - Fix the two securing brackets on the wall using screws (2 per bracket).
  - Fix the cabinet on the securing brackets using the screws in the mounting kit (2 per bracket).

Caution: *The front panel of the cabinet can face upwards or downwards, though we recommend turning it upwards.*



6.2.4 Wiring (AXD, AXL, AXS, AXS12 and AXS6)

PRÉSENTATION

On this cabinet, all connections are made on the front panel of the various sub-assemblies of the cabinet.

CONTRAINTE

- Always use the recommended cable (see section “Installation and wiring specifications” for each sub-assembly to install: § 4.6 to 4.14).
- Use the correct cable lengths and avoid coiling excess cable inside the rack
- Always label cables and keep a record of the cabling.

6.2.4.1 *Powering on the system*

Before switching on the power, check that:

- The cabinet is permanently connected to the ground socket
- Air flows freely all around the cabinet(s) and there are no objects lying on the cabinet. There must be sufficient space between the cabinet and the wall.
- All expansion cards are connected (AXD, AXL, AXS, AXS12 and AXS6 cabinets).
- All equipment is connected to the cabinet and grounded.

If an external 48 V battery (AXL, AXS, AXS12 and AXS6 cabinet option) is used, check its connection to the power module or at the back of the AXD cabinet.

For a system with only 1 cabinet

- Set the “I/O” push button to “I”.

For a system with only several cabinets

In systems with 2 or 3 cabinets, first power on the expansion cabinet(s) (“I/O” push-button in position “I”) then the main cabinet.

6.2.4.2 *Viewing the status of the indicators located on the CPU card(s)*

Refer to Chapter 4 for each type of configuration.

6.2.5 Starting up a new system

Since the system has been pre-set in the factory, to start it up, you only need to define the IP parameters on the CPU card.

Access is provided locally on the COM port of the CPU card, using a NULL MODEM cable (ref.: :BHG0024A) connected between the COM port of the CPU card and the PC COM port.

Procedure

On the PC connected to the COM port

- Open a Hyperterminal window and configure the connection as follows:
  - Bits per second: 115200 bits/s
  - Data bits: 8
  - Parity: none
  - Stop bits: 1
  - Flow control: None
- Power on the cabinet and follow the start-up progress on the PC:
- Upon display of "**Identification starting**"
- Press **Ctrl** + **I**

- The screen then displays the different configuration modes.

```
Configuration mode (F/T/S/P/E)
- F: Factory mode
- T: Total mode
- S: Standard mode
- P: Password reset
- E: for Exit
```

- Select "**s**" mode then press "**Return**" to enter the network pre-configuration menu.

The system's default network pre-configuration is displayed on screen.

It is from this screen, during a first installation, that the defined address can be used to access the iPBX management function via AMP.

Access is physical via the **LAN** port on the CPU card front panel.

If it becomes necessary to configure administration and telephony flow seperation, the address indicated on this screen will be dedicated to the telephony network in association with the one defined for network administration in the **ADMINISTRATION NETWORK** menu.

For this type of configuration, see the specific document :

Operating manual for telephony and administration flow separation AMT/PTD/PPBX/0101.

```
AASTRA 5000 CONFIGURATION / NETWORK

*-------------------------------------------------*
| ENTER IP ADDRESS: 192.168.65.1
| ENTER NETWORK MASK: 255.255.255.0
| ENTER GATEWAY: 192.168.65.254
*-------------------------------------------------*
DO YOU WANT TO CHANGE CONFIGURATION Y(ES)/N(O) ? Y
```

- Press "**y**" then "**Return**" to confirm and return to the different fields.
- Enter successively the system parameters, using the **Return** key to change line.

```
AASTRA 5000 CONFIGURATION / NETWORK

*-------------------------------------------------*
| ENTER IP ADDRESS: 100.100.40.150 |
| ENTER NETWORK MASK: 255.255.255.192 |
| ENTER GATEWAY: 100.100.40.129 |
*-------------------------------------------------*
```

After the last line is validated, a summary of the network parameters is displayed for confirmation.

```
AASTRA 5000 CONFIGURATION / NETWORK
*-------------------------------------------------*
| SUMMARY |
*-------------------------------------------------*
*-------------------------------------------------*
| IPADR = 100.100.40.150 |
| NETWORKMASK = 255.255.255.192 |
| GATEWAY = 100.100.40.129 |
| NETWORKADR = 100.100.40.128 |
| BROADCAST = 100.100.40.191 |
*-------------------------------------------------*
DO YOU CONFIRM (Y/N)? Y
```

If the summary is not correct:

- Press "**n**" to restart network pre-configuration.
- If the summary is correct:
- Press "**y**" and confirm by pressing "**Return**".

Nota : *By default, the EIP card(s) is/are automatically assigned an address and is/are automatically activated. The values assigned are IPADR + 1 and IPADR + 2 (in case of two EIP cards)*

Attention : *This feature may result in IP address clashes. It is advisable to check that the EIP card IP address is correct for your address plan.*

The screen below opens, asking whether the administration network must be configured in case of administration and telephony flow separation.

```
DO YOU WANT TO CONFIGURE MANAGEMENT IP NETWORK ? Y/[N]
```

If this configuration is not necessary, answer "**n**" and confirm with the "**Return**" key to go to the next screen concerning the service status.

If this configuration is necessary in this phase, see the specific document : Operating manual for telephony and administration flow separation - **AMT_PTD_PBX_0101**.

The status of FTP, TMA and DHCP services can be modified on the following screens:

These services are used by the TMA application, and to manage IP terminals. Refer to the document [15].

Note : *It is, however, possible to activate these services later from AMP if automatic deployment is not envisaged.*

```
AASTRA 5000 CONFIGURATION / SIP SERVICE
 AN EXISTING CONFIGURATION WAS FOUND
*-------------------------------------------------*
| FTP : 1 |
| TMA : 1                                         |
| DHCP : 0                                        |
*-------------------------------------------------*
DO YOU WANT TO CHANGE CONFIGURATION Y(ES)/N(O) ?
```

- If the answer is YES, "**y**", the following screen can be used to modify the configuration parameters for the deployment of terminals 67xxi (or to deactivate these services if other deployment solutions are envisaged).

```
Aastra 5000 Configuration / Services
 *-------------------------------------------------*
| FTP :                1 |
| TMA :                1                          |
| DHCP :               0
*-------------------------------------------------*
Enter: 1 for DHCP
Do you confirm (Y/N)?
```

The values entered must be 0 (deactivated) or 1 (activated).

FTP : value 0 or 1.

This field allows the use (1 = yes) or non-use (0= no) of the FTP service integrated into Aastra X series terminals during a first installation. The FTP server must be enabled (1) in order to then use the integrated DHCP and TMA services.

Default value in factory setting: **FTP = 1**

Note : *This FTP field is not proposed for the Aastra 5000 server.*

TMA: value 0 or 1.

This field allows the use (1 = yes) or non-use (0= no) of the TMA service integrated into Aastra X series terminals. For management with AM7450, the integrated TMA service is inactive since management is centralised for all the terminals on AM7450.

Default value in factory setting: **TMA = 1**

DHCP: value 0 or 1.

This field allows the use (1 = yes) or non-use (0= no) of the DHCP service integrated into Aastra X series terminals.

If an external DHCP server is used, the integrated DHCP service is inactive.

If the DHCP value is 0, then VLANID and VLANPORT are proposed.

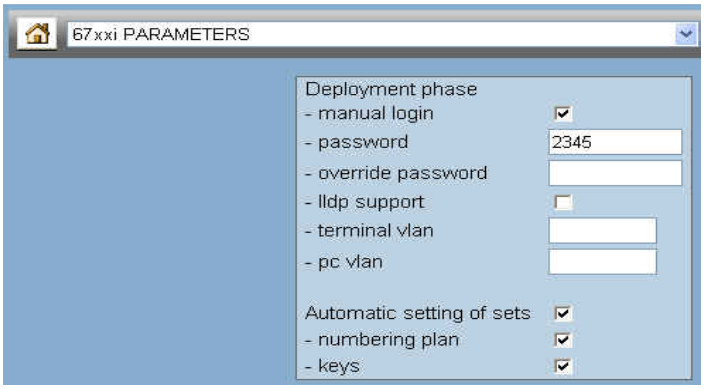
```
Aastra 5000 Configuration / SIP 67xxi
 An existing configuration was found
*-------------------------------------------------*
| DEPLOYMENT XML SERVER : 1                       |
| DEPLOYMENT PASSWORD : 2345                      |
| LLDP ENABLED : 0                                |
| VLAN ID :                                       |
| VLAN PORT :                                     |
*-------------------------------------------------*
Do you want to change configuration Y(es)/N(o) ?  N
```

DEPLOYMENT XML SERVER

This field is used to activate (1 = yes) or deactivate (0= no) access to the XML server used to open a deployment session.

DEPLOYMENT PASSWORD

This password is optional and is used to open a session during deployment with the XML server for activating the DEPLOYMENT XML SERVER parameter. The default value is **2345**, but can be modified. This value can also be displayed and modified in the AMP menu **Subscribers/67xxi terminals parameters/Parameters**.



LLDP ENABLED

This field is used to activate the LLDP protocol in the terminal, (1 = yes) or no (0= no),

VLAN ID and VLAN PORT: These parameters are used to define the VLAN dedicated to terminals 67xxi, A53xxip and i7xx). They are not obligatory on simple networks.

If the DHCP value 1, the screen is displayed.

```
Aastra 5000 Configuration / SIP 67xxi
 An existing configuration was found
*-------------------------------------------------*
| DEPLOYMENT XML SERVER : 1                       |
| DEPLOYMENT PASSWORD : 2345                      |
| LLDP ENABLED : 0                                |
|
*-------------------------------------------------*
Do you confirm (Y/N)?
```

Enter "**y**" to configure the integrated DHCP service.

```
Aastra 5000 Configuration / DHCP
 *-------------------------------------------------*
| SUBNET MASK :
| BEGIN RANGE :                                   |
| END RANGE :                                     |
| GATEWAY :                                       |
| VLAN ID :                                       |
| VLAN PORT :                                     |
*-------------------------------------------------*
Invalid_IP_BEGINRANGE
```

SUBNET MASK: subnet mask dedicated to IP and SIP terminals

BEGIN RANGE and END RANGE: Address range dedicated to IP and SIP terminals

GATEWAY: gateway IP address of the network dedicated to IP and SIP terminals.

VLAN ID and VLAN PORT: These parameters are used to define the VLAN dedicated to terminals 67xxi, A53xxip and i7xx). They are not obligatory on simple networks.

The system then restarts automatically, and the its IP network link can be set up via the LAN access.

Start-up is now complete and you can configure the site from the user interface. For terminal management refer to the document [15].

Note : *You can modify the factory settings completely, using the **T** mode after pressing **Ctrl** + **I** (see Section 6.2.7).*

6.2.6 Accessing Aastra Management Portal (User interface).

Note : *Accesses through analogue modem, ISDN modem and ISDN router are described in Section 6.11. A backup remote access mode is equally available in case of web browser unavailability (see Section 6.2.6.3).*

6.2.6.1 Accessing the user interface (Aastra Management Portal) via the LAN

The operating console must be connected to the same network as the Aastra series system (CPU card LAN port).

- Open a web browser installed on the operating console (Internet Explorer, for instance).
- Enter the IP address defined for the system: https://@IP (secure access mode)

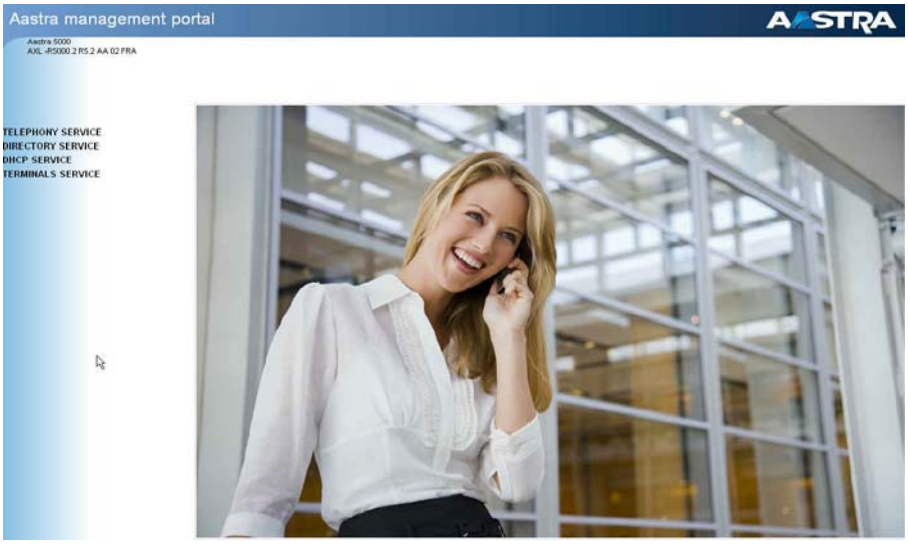
Note : *Default address in factory setting: 192.168.65.01*

- Some security windows for this "https" access mode are then displayed successively; enter “YES” for each of them.
- The web browser (Internet Explorer) displays a security alert when connecting to the AMP; this alert can be deactivated. Refer to the appendix to this document 11.1

A login window opens.

- Enter the default access login: admin
- Enter the default access password: admin

The AMP welcome screen is displayed.

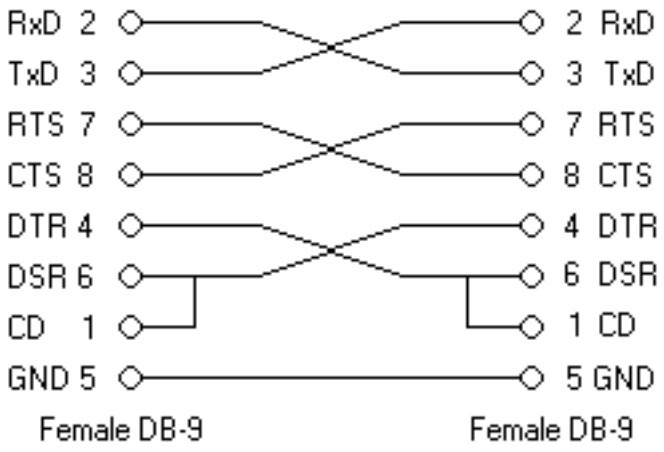


6.2.6.2 *Accessing the user interface (Aastra Management Portal) in local access mode via the COM port (PPP protocol)*

The PPP exchange protocol can set up a network type connection between two systems on a serial point-to-point link.

6.2.6.2.1 Connectors

Access is provided on the COM port of the CPU card (ISDN type access), using a NULL MODEM cable (ref.: :BHG0024A) connected between the COM port of the CPU card and the PC COM port.



6.2.6.2.2 Configuring the serial connection

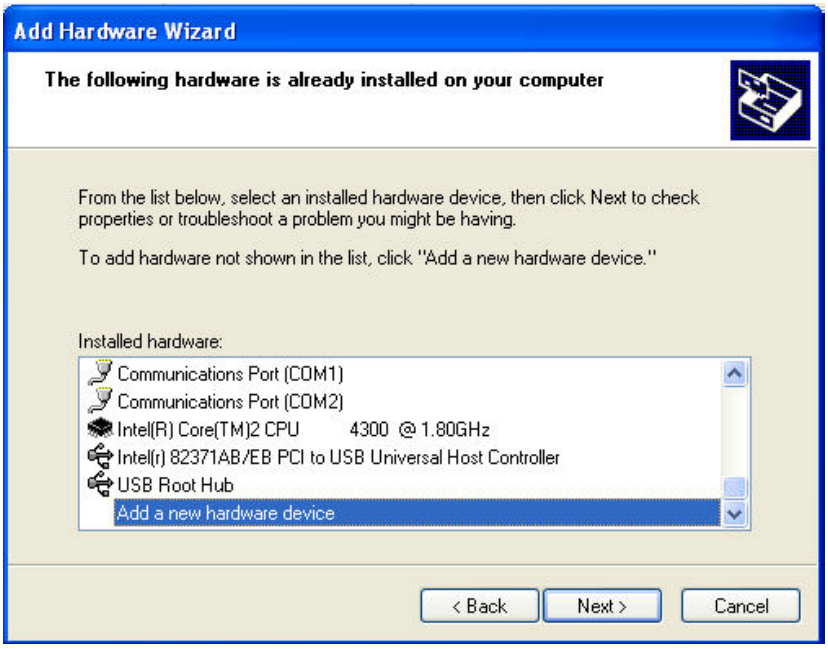
Windows PC specifications

A modem of the type " **communication cable between two computers** " must be installed. Use Device manager to check the presence of this pseudo modem.

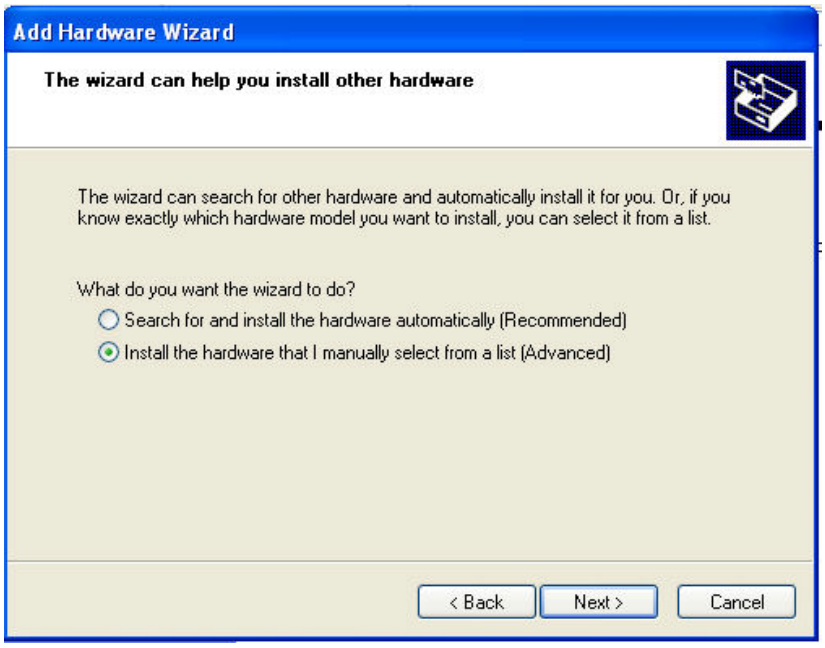
If the modem is not installed, proceed as follows.

In Control Panel

- Select " **Add hardware** ".
- After automatic detection, select " **Yes, I have already connected the hardware** " then choose" **Add a new device** " in the window that opens.

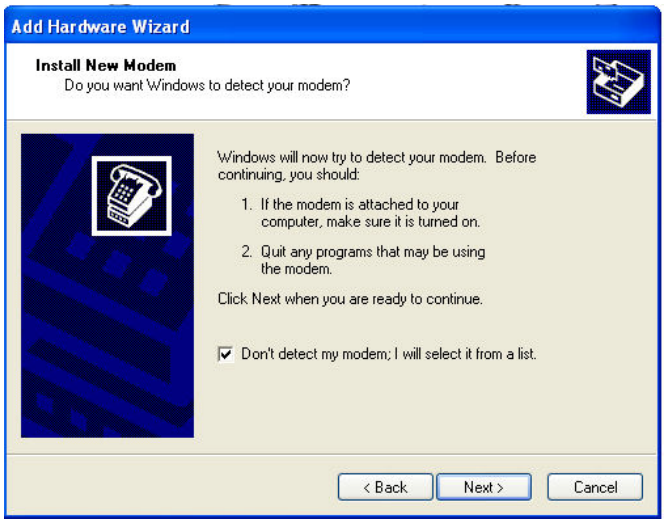

Add Hardware Wizard
The following hardware is already installed on your computer
From the list below, select an installed hardware device, then click Next to check properties or troubleshoot a problem you might be having.
To add hardware not shown in the list, click "Add a new hardware device."
Installed hardware:
Communications Port (COM1)
Communications Port (COM2)
Intel(R) Core(TM)2 CPU 4300 @ 1.80GHz
Intel(r) 82371AB/EB PCI to USB Universal Host Controller
USB Root Hub
Add a new hardware device
< Back
Next >
Cancel

- Click “**Next**”.

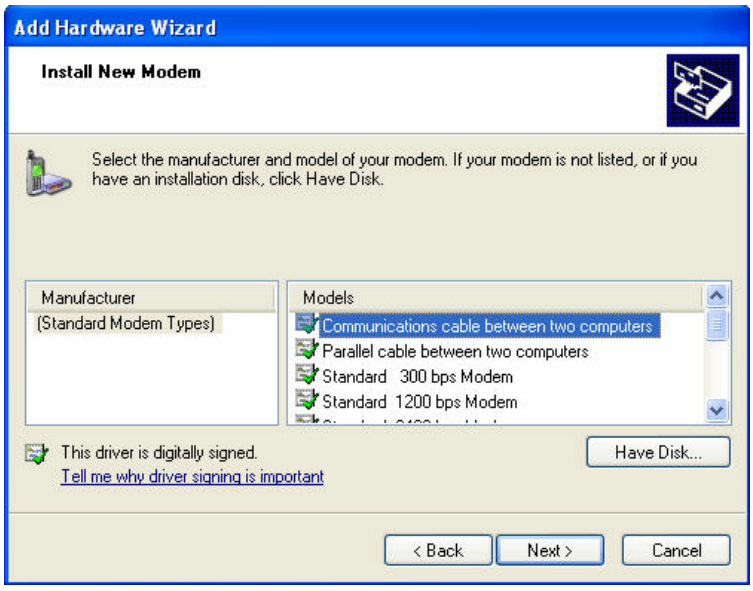

Add Hardware Wizard
The wizard can help you install other hardware
The wizard can search for other hardware and automatically install it for you. Or, if you know exactly which hardware model you want to install, you can select it from a list.
What do you want the wizard to do?
Search for and install the hardware automatically (Recommended)
Install the hardware that I manually select from a list (Advanced)
< Back
Next >
Cancel

- Tick the option " i**nstall the hardware I manually select from a list** " then choose " **Modem** ".
- Click "**Next**"

- In the following screen, tick the option "**Do not detect my Modem**"


Add Hardware Wizard
Install New Modem
Do you want Windows to detect your modem?
Windows will now try to detect your modem. Before continuing, you should:
1. If the modem is attached to your computer, make sure it is turned on.
2. Quit any programs that may be using the modem.
Click Next when you are ready to continue.
Don't detect my modem; I will select it from a list.
< Back
Next >
Cancel

- Click "**Next**".


Add Hardware Wizard
Install New Modem
Select the manufacturer and model of your modem. If your modem is not listed, or if you have an installation disk, click Have Disk.
Manufacturer
(Standard Modem Types)
Models
Communications cable between two computers
Parallel cable between two computers
Standard 300 bps Modem
Standard 1200 bps Modem
This driver is digitally signed.
Tell me why driver signing is important
Have Disk...
< Back
Next >
Cancel

- Select the modem " **Communication cable between two computers** " then choose a communication port.
- Click "**Next**"

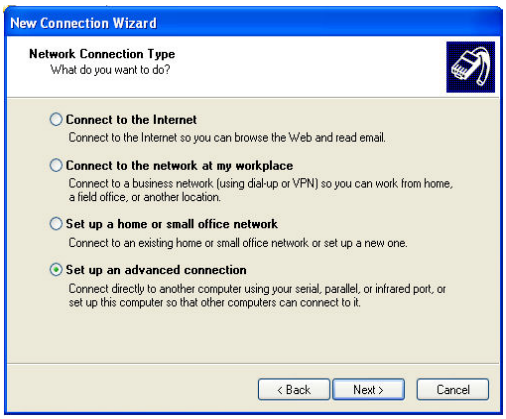
The next screen indicates that the modem is now installed: it is visible in the Device manager.

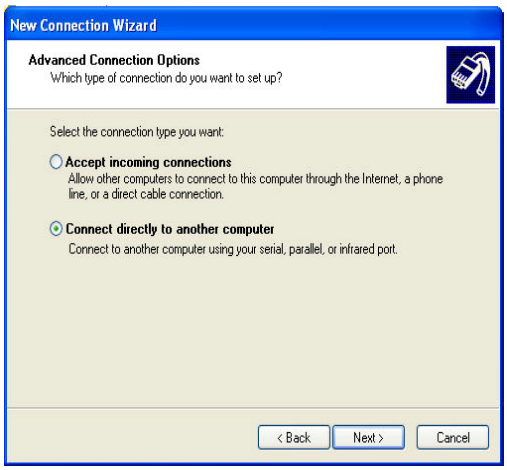
- Click "**Finish**"

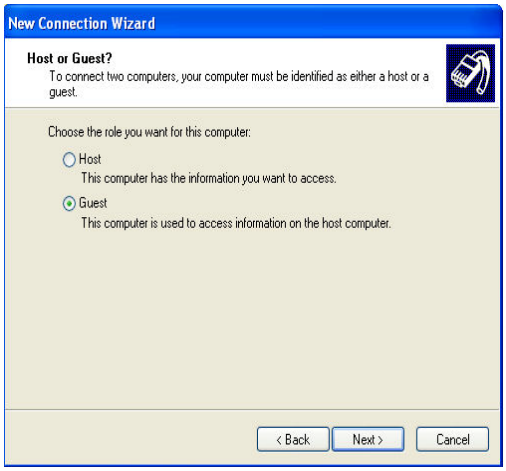
Configuring the PPP connection

In Control Panel

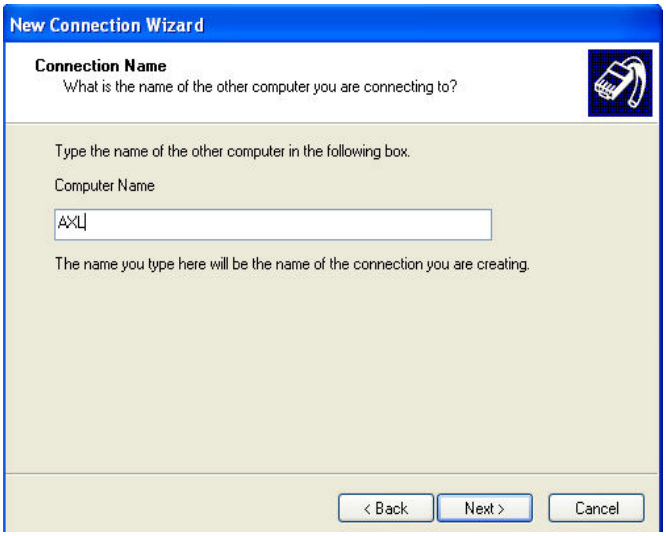
- Click " **Network connections** ".
- Select "**Create a new connection**".
- Tick successively the boxes indicated below.


New Connection Wizard
Network Connection Type
What do you want to do?
Connect to the Internet
Connect to the Internet so you can browse the Web and read email.
Connect to the network at my workplace
Connect to a business network (using dial-up or VPN) so you can work from home, a field office, or another location.
Set up a home or small office network
Connect to an existing home or small office network or set up a new one.
Set up an advanced connection
Connect directly to another computer using your serial, parallel, or infrared port, or set up this computer so that other computers can connect to it.
< Back
Next >
Cancel

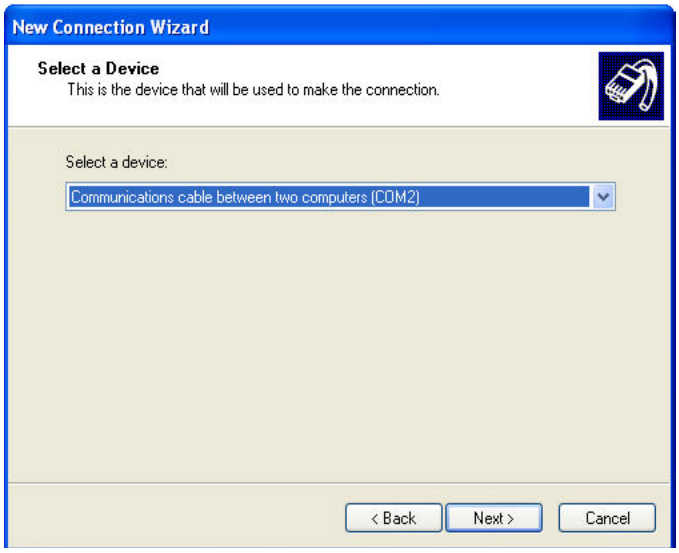

New Connection Wizard
Advanced Connection Options
Which type of connection do you want to set up?
Select the connection type you want:
Accept incoming connections
Allow other computers to connect to this computer through the Internet, a phone line, or a direct cable connection.
Connect directly to another computer
Connect to another computer using your serial, parallel, or infrared port.
< Back
Next >
Cancel


New Connection Wizard
Host or Guest?
To connect two computers, your computer must be identified as either a host or a guest.
Choose the role you want for this computer:
Host
This computer has the information you want to access.
Guest
This computer is used to access information on the host computer.
< Back
Next >
Cancel

- Enter a name for this network connection.


New Connection Wizard
Connection Name
What is the name of the other computer you are connecting to?
Type the name of the other computer in the following box.
Computer Name
AXL
The name you type here will be the name of the connection you are creating.
< Back
Next >
Cancel

- Select the device "**Communication cable between two computers**".

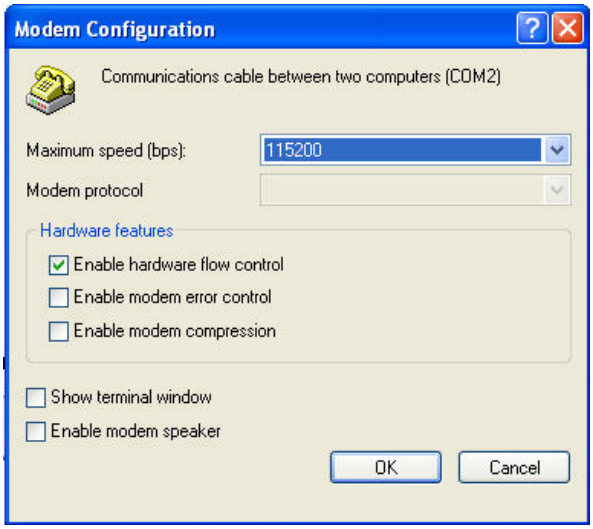

New Connection Wizard
Select a Device
This is the device that will be used to make the connection.
Select a device:
Communications cable between two computers (COM2)
< Back
Next >
Cancel

- In the next screen, indicate the restriction on the use of this connection.

The connection is now defined.

Configuring the connection port

The configuration is made in the " **Properties** " menu of the network connection.



- Choose 15200 bits/s
- Tick the option "**Enable hardware flow control**".

Setting up a connection on the PBX

In the " **Start** " menu, " **Parameters** " tab, start the connection to the PBX.

- Login: user
- Password: guest

The PPP connection characteristics are displayed using the Windows ipconfig command. By default, the IP addresses 192.168.0.101 and 192.168.0.102 are used for the system and for the PC.

```
Carte PPP AXL :

        Suffixe DNS propre à la connexion :
        Description . . . . . . . . . . . : WAN (PPP/SLIP) Interface
        Adresse physique . . . . . . . . . : 00-53-45-00-00-00
        DHCP activé. . . . . . . . . . . . : Non
        Adresse IP. . . . . . . . . . . . : 192.168.0.102
        Masque de sous-réseau . . . . . . : 255.255.255.255
        Passerelle par défaut . . . . . . : 192.168.0.102
```

Note:

For a stand-alone PC and if the PBX IP address is used, IP routing uses the PPP connection as available route to access the IP address provided.

If the PC is located on the same network as the PBX, it is necessary to disconnect the PC from the network to force routing via PPP connection. In this case, it is more practical to use the IP address " 192.168.0.101 " of the PPP interface.

6.2.6.2.3 Accessing the AMP via serial link

- Open a web browser installed on the operating console (Internet Explorer, for instance).
- Enter the address reserved for this access mode: https://192.168.0.101 (secure access mode).
- Some security windows for this "https" access mode are then displayed successively; enter “YES” for each of them.
- A Login window opens, allowing access to AMP.

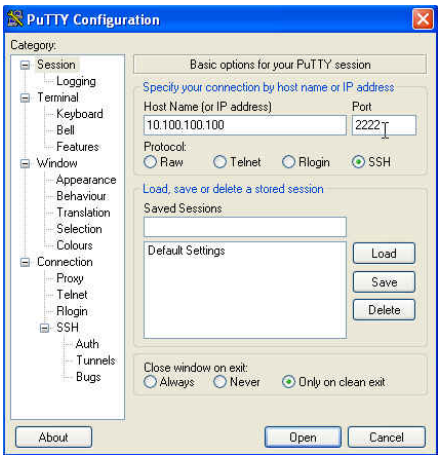
6.2.6.3 *Backup remote access to AMP in SSH mode*

In case of AMP inaccessibility via the web browser, it is possible to connect securely to a remote server integrated into Aastra X series systems (Linux Debien server) thanks to the SSH protocol.

Note : *An SSH client (Secure Shell) is used to connect securely to a remote server thanks to the SSH protocol.*

Using an appropriate communication software application (putty, for example) proceed as follows:

- Run this application.



- Enter the IP address of the target Aastra X series system in the " **Host Name**" field.
- Enter the port number for this connection "**2222**" in the "**Port**" field.
- Click "**Open**".

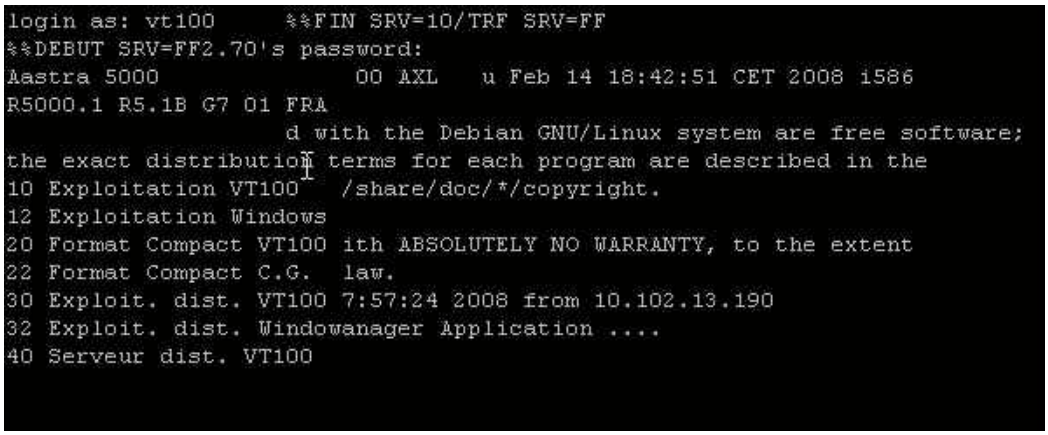
A console screen is displayed.

- Enter the login " **vt100** ".
- Enter the password " **vt100** ".

Communication is set up.

On the following screen, select the access mode for the AMP user interface in VT100

mode.


login as: vt100 %%FIN SRV=10/TRF SRV=FF
%%DEBUT SRV=FF2.70's password:
Aastra 5000 00 AXL u Feb 14 18:42:51 CET 2008 i586
R5000.1 R5.1B G7 01 FRA
d with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
10 Exploitation VT100 /share/doc/*/copyright.
12 Exploitation Windows
20 Format Compact VT100 ith ABSOLUTELY NO WARRANTY, to the extent
22 Format Compact C.G. law.
30 Exploit. dist. VT100 7:57:24 2008 from 10.102.13.190
32 Exploit. dist. Windowanager Application ....
40 Serveur dist. VT100

- Default access login: " **admin** "
- Default access password: " **admin** "

Access to the AMP interface is provided in VT100 mode. See Aastra Management Portal Operating Manual (Document [1]) for the analogy with the use of AMP in web mode.

6.2.7 Modifying the factory settings

The system is preset in the factory, but it is possible to fully modify these factory settings on site.

Access is provided locally on the COM port of the CPU card, using a NULL MODEM cable (ref.: :BHG0024A) connected between the COM port of the CPU card and the PC COM port.

Procedure

On the PC connected to the COM port

- Open a Hyperterminal window and configure the connection as follows:
  - Bits per second: 115200 bits/s
  - Data bits: 8
  - Parity: none
  - Stop bits: 1
  - Flow control: None
- Power on the cabinet and follow the start-up progress on the PC:
- Upon display of "**Identification starting**"
- Press **Ctrl** + **I**
- The screen then displays the different configuration modes.

```
Configuration mode (F/T/S/P/E)
- F: Factory mode
- T: Total mode
- S: Standard mode
- P: Password reset
- E: for Exit
```

- Select "**T**" mode to enter the pre-configuration menus.

The system's default network pre-configuration is displayed on screen.

It is from this screen, during a first installation, that the defined address can be used to access the iPBX management function via AMP.

Access is physical via the **LAN** port on the CPU card front panel.

If it becomes necessary to configure administration and telephony flow seperation, the address indicated on this screen will be dedicated to the telephony network in association with the one defined for network administration in the **ADMINISTRATION NETWORK** menu.

For this type of configuration, see the specific document :

Operating manual for telephony and administration flow separation AMT/PTD/PPBX/0101.

```
AASTRA 5000 CONFIGURATION / NETWORK

*-------------------------------------------------*
| ENTER IP ADDRESS: 192.168.65.1
| ENTER NETWORK MASK: 255.255.255.0
| ENTER GATEWAY: 192.168.65.254
*-------------------------------------------------*
DO YOU WANT TO CHANGE CONFIGURATION Y(ES)/N(O) ? Y
```

- Press "**y**" then "**Return**" to confirm and return to the different fields.
- Enter successively the system parameters, using the **Return** key to change line.

```
AASTRA 5000 CONFIGURATION / NETWORK

*-------------------------------------------------*
| ENTER IP ADDRESS: 100.100.40.150 |
| ENTER NETWORK MASK: 255.255.255.192 |
| ENTER GATEWAY: 100.100.40.129 |
*-------------------------------------------------*
```

After the last line is validated, a summary of the network parameters is displayed for confirmation.

```
AASTRA 5000 CONFIGURATION / NETWORK
*-------------------------------------------------*
| SUMMARY |
*-------------------------------------------------*
*-------------------------------------------------*
| IPADR = 100.100.40.150 |
| NETWORKMASK = 255.255.255.192 |
| GATEWAY = 100.100.40.129 |
| NETWORKADR = 100.100.40.128 |
| BROADCAST = 100.100.40.191 |
*-------------------------------------------------*
DO YOU CONFIRM (Y/N)? Y
```

If the summary is not correct:

- Press "**n**" to restart network pre-configuration.
- If the summary is correct:
- Press "**y**" and confirm by pressing "**Return**".

Nota : *By default, the EIP card(s) is/are automatically assigned an address and is/are automatically activated. The values assigned are IPADR + 1 and IPADR + 2 (in case of two EIP cards)*

Attention : *This feature may result in IP address clashes. It is advisable to check that the EIP card IP address is correct for your address plan.*

The screen below opens, asking whether the administration network must be configured in case of administration and telephony flow separation.

```
DO YOU WANT TO CONFIGURE MANAGEMENT IP NETWORK ? Y/[N]
```

If this configuration is not necessary, answer "**n**" and confirm with the "**Return**" key to go to the next screen concerning the service status.

If this configuration is necessary in this phase, see the specific document : Operating manual for telephony and administration flow separation - **AMT_PTD_PBX_0101**.

The licence number declaration screen is then displayed.

```
      Aastra 5000 Configuration / Licence

*-----------------------------------------------
                          --*
| Licence:                                     |
*-----------------------------------------------
                          --*
Do you want to change configuration Y(es)/N(o) ? n
```

- Enter the corresponding value (optional: it may be entered later from AMP).
- Press "**Return**" to confirm, after entering "**y**" or "**n**".

The system's PARI number configuration screen is displayed:

```
AASTRA 5000 CONFIGURATION / CONFIGURATION/PARI
*-----------------------------------------------*
|PARI: 123456789 |
DO YOU WANT TO CONFIGURE PARI (Y/N): Y
```

- If you answer YES, "**y**", the next screen allows you to redefine this number.
- Enter the corresponding value.
- Press "**Return**" to confirm, after entering "**y**" or "**n**".

The status of FTP, TMA and DHCP services can be modified on the following screens. Refer to Section 6.2.

```
AASTRA 5000 CONFIGURATION / SIP SERVICE
 AN EXISTING CONFIGURATION WAS FOUND
*-------------------------------------------------*
| FTP : 1
| TMA : 1                                         |
| DHCP : 0                                        |
*-------------------------------------------------*
DO YOU WANT TO CHANGE CONFIGURATION Y(ES)/N(O) ?
```

After this series of screens concerning TMA, FTP and DHCP services, the system's general parameters declaration screen opens (name, IID (system identification number)):

```
AASTRA 5000 CONFIGURATION / Name&IID
*-----------------------------------------------*
| DO YOU WANT TO CONFIGURE NAME/IID (Y/N): Y |
```

- If you answer YES, "**y**", the next screen allows you to declare the system's general parameters.
- Fill in successively the different fields, using the **Return** key to change line.

```
AASTRA 5000 CONFIGURATION / Name&IID

*-------------------------------------------------*
| NAME: A5000 |
| IID: 00130927001 |
*-------------------------------------------------*
```

- After the last line is validated, a summary of the network parameters is displayed for confirmation.
- If the values are correct, press "**Return**" to confirm, after pressing "**y**".

The next screen is used to configure call distribution.

```
AASTRA 5000 CONFIGURATION / Call Dist
*-----------------------------------------------*
| DO YOU WANT TO CONFIGURE CALL DISTRIBUTION: Y |
*-----------------------------------------------*
```

- Press "**Return**" to confirm, after entering "**y**" or "**n**".

If the answer is "**y**", fill in successively the different fields, by pressing **Return** to change line.

```
AASTRA 5000 CONFIGURATION / Call Dist

*-------------------------------------------------*
| SUBSCRIBER: 3005 |
| DID: 4000 |
*-------------------------------------------------*
```

The "**SUBSCRIBER**" field is used to assign a subscription number as day and reduced number to call distribution 0. This number is assigned if it corresponds to an internal subscription which can be added to a call distribution service, or if it corresponds to the number of a subscription that may be on the multi-site network (A5000 Server).

The "**DID**" field is used to assign a DID number to call distribution service0. Authorised characters are " 0123456789ABCDE".

- After the last line is validated, a summary of the network parameters is displayed for confirmation.
- If the values are correct, press "**Return**" to confirm, after pressing "**y**".

The next screen is used to configure the numbering plan length.

```
AASTRA 5000 CONFIGURATION / NL
*-------------------------------------------------*
| DO YOU WANT TO CONFIGURE NUMBERING LENGTH: Y |
*-------------------------------------------------*
```

- Press "**Return**" to confirm, after entering "**y**" or "**n**".

If the answer is "**y**", enter the corresponding values.

The field is used to define the internal number length to take into account (2 to 6). This field is associated with the fields **first**, **last**, **modem**, **IVB**, **hscx**, **common subscriber** and **common bell** defined on the "Subscribers" screen.

```
AASTRA 5000 CONFIGURATION / NL

*-------------------------------------------------*
| NUMBERING LENGTH: 4 |
*-------------------------------------------------*
DO YOU WANT TO CHANGE CONFIGURATION Y(ES)/N(O) ? Y
```

- Press "**Return**" to confirm, after entering "**y**".

- The following screen is used to configure subscriptions.

```
AASTRA 5000 CONFIGURATION / Subscribers
*-----------------------------------------------*
| DO YOU WANT TO CONFIGURE SUBSCRIBERS (Y/N): Y |

*-----------------------------------------------*
```

If the answer is "**y**", fill in successively the different fields, by pressing **Return** to change line. These fields are described below.

```
AASTRA 5000 CONFIGURATION / Subscribers

*-----------------------------------------------*
| CREATION: 0 |
| IVB CREATION: 1 |
| FIRST: 3000 |
| LAST: 3999 |
| FIRST DID: 3000 |
| FIRST PUBLIC DID: +33(0)136923000 |
| MODEM: 0 |
| IVB: |
| HSCX: 0 |
| COMMON SUBSCRIBER: 3500 |
| COMMON BELL: 3001 |
| ADDITIONAL SUBSCRIPTIONS: 40 |
*-----------------------------------------------*
```

The **Creation** field may be used to inhibit automatic subscriber creation. This field may take on the values 0 (= creation inhibited) or 1(= creation authorised).

The **IVB creation** field is used to inhibit automatic creation of integrated voice mail boxes for subscribers during automatic creation of subscriptions. This may take on the values 0 (= creation inhibited) or 1 (= creation authorised).

The **numbering length** field defined on the previous screen contains the internal number length to take into account (1 to 4). If this value is valid, the fields **first**, **last**, **modem**, **IVB**, **hscx**, **common subscriber** and **common bell** will be taken into account. Otherwise, they will be ignored.

The field **first** contains the first internal subscription that can be created automatically, while the field **last** contains the last one.

The fields **common subscriber, common bell**, **IVB**, **modem**, and **hscx** are read in this order and taken into account if they are in the complete block and if this number does not

exist already. If this is not the case, or if the field does not exist, they are assigned a default number. If their value is 0, they will not be assigned any number. The only exception is **common subscriber** which must always have a number.

The **additional subscriptions** field indicates the number of further internal subscriptions to create.

The **first DID** field is used to create the external block 0 associated with the internal number block [first, last]. Authorised characters are " 0123456789ABCDE". For this block to be created, this number must belong to an incoming number plan.

The field **first public DID** is used to associate a public number (format: 0130967000 or +33(0)130967000) with the DID number for block 0. This ASCII string will be truncated to 20 characters.

Managing the assignment of numbers to subscriptions:

Create a general-purpose subscription.

If automatic creation is authorised, for each subscriber equipment detected, create a subscription, assign it a DID number (read in the external block), or assign it a voice mail box if creation is authorised. Then update its LDAP directory record with the internal number and possibly DID number. Then assign this subscription to the detected equipment and then go to the next equipment.

After processing all the equipment, if automatic creation is allowed, create as many additional subscriptions as necessary (and as possible). Assign them a DID number (read in the external block) and a voice mail box if automatic creation is authorised, then update their LDAP directory record with the internal number and possibly DID number.

- After the last line is validated, a summary of the network parameters is displayed for confirmation.
- The screen then displays a summary of the configuration made.

```
*-------------------------------------------------*
| SUMMARY:
|
*-------------------------------------------------*
| IPADR = 100.100.40.150 |
| NETWORKMASK = 255.255.255.192 |
| GATEWAY = 100.100.40.129 |
| NETWORKADR = 100.100.40.128 |
| BROADCAST = 100.100.40.191 |
|NAME =               XL                          |
| IID =                DOC                         |
| SUBSCRIBER =         3000                        |
| DID =                4000                        |
| NUMBERING LENGTH =   4                           |
| COUNTRY =            FRA                         |
| LICENCE =            4LMLMLLMLMLMLMLML |
| PARI =               123456789                   |
| START UP TYPE =      TOTAL
*-------------------------------------------------*
DO YOU WANT TO APPLY YOUR CHANGE Y(ES)/N(O)/R(ECONFIGURE) ? Y
```

> If the summary is not correct:

- Press "**r**" to restart the preconfiguration.

> To leave the "T" mode and restart with the previous configuration without saving the modifications

- Press "**n**"; the system restarts with the previous configuration.

>If the summary is correct:

- Press "**y**" if the values displayed are correct and confirm by pressing "**Return**".

The system then restarts automatically, and the its IP network link can be set up via the LAN access.

Start-up is now complete and you can configure the site from the user interface.

Remarque :You can configure automatic or manual start of the SIP gateway or SNMP agent from the AMP. By default, the SIP gateway is started, and the SNMP agent activated.

6.2.8 Resetting the manufacturer's password (in case of loss)

The default manufacturer's password can be reset if the user loses the manufacturer's access code defined from the menu **TELEPHONY/SYSTEM/Configuration/Users/System accounts** (if the user had chosen its modification).

This may become necessary if the user loses or forgets this manufacturer's access code.

Rappel : *The manufacturer's access code may be modified to reinforce system security. In this case, neither the user nor the manufacturer (AASTRA) will have access to AMP in manufacturer mode (see the document AMT_PTD_PBX_0080 for information about password management).*

Preliminary operation

Contact AASTRA's customer service to obtain the values **Enter Identifier** and **Enter Key** which will be required during the procedure described below. You also need to provide the (i-Button) ID number. This number will be provided to AASTRA in order to generate the values **Enter Identifier** and **Enter Key**.

Procedure

On the PC connected to the COM port

- Open a Hyperterminal window and configure the connection as follows:
  - Bits per second: 115200 bits/s
  - Data bits: 8
  - Parity: none
  - Stop bits: 1
  - Flow control: None
- Power on the cabinet and follow the start-up progress on the PC:
- Upon display of "**Identification starting**"
- Press **Ctrl** + **I**
- The screen then displays the different configuration modes.

```
Configuration mode (F/T/S/P/E)
- F: Factory mode
- T: Total mode
- S: Standard mode
- P: Password reset
- E: for Exit
```

- Select "**P**" mode to enter the pre-configuration menus.
- In the next screen, enter the values **Enter Identifier** and **Enter Key** provided by

AASTRA,

```
AASTRA 5000 CONFIGURATION / NETWORK

*------------------------------------------------*
| ENTER IDENTIFIER : IPNH123LMNVKGH5U
| ENTER NETWORK MASK: POULKJEPOSD5Q9/P
| *----------------------------------------------*
PLEASE_ENTER_A_VALID_ID_KEY
```

- Press "**Return**" to confirm.
- Then answer "**Y(es)**" to the next questions to complete the procedure.
- At the end of the procedure, the manufacturer's default login and password are regenerated and can be used again.

The manufacturer's default access code is also reset in the menu **TELEPHONY/SYSTEM/ Configuration/Users/System accounts**.

The AMP access login/password are reset:

- Default access login: **admin**
- Default access password: **admin**

6.2.8.1 *Massive import from the massive creation form*

To avoid repetitive tasks on AMP, massive import consists in first creating in an Excel form a set of configuration data listed for the site.

This form is then converted to a format (**.csv)** compatible with the Aastra X series.

The file thus generated can be imported from AMP, Menu **System/Software maintenance/Massive import**.

Refer to Section 11.4 for information on how to use this form.

6.2.8.2 *Additional configurations*

You can configure the services (LDAP, SNMP, GSI, FTP, TFTP, etc.) and display their status from the "**TELEPHONY SERVICE/SYSTEM/Configuration/Services**" menu of Aastra Management Portal. See Aastra Management Portal operating manual.

6.3 Operations on a site already installed

There are several types of operations on a completed installation site:

Hardware operations:

- Handling a card
- Adding a CLX card
- Adding an equipment card
- Adding a daughter card to an expansion card or CPU card (EIP)
- Adding an expansion cabinet
- Adding a power module
- Changing to DUPLEX configuration for AXD

Software operations:

- Updating the iPBX software
- Backing up the configuration
- Restoring the configuration associated with the use of VUs

6.3.1 Equipment checklist

If the customer wishes to install equipment from an existing installation, e.g. the customer may supply a common bell device and an external music source, to determine the overall size of the new installation, produce a full equipment checklist:

- Existing equipment
- New equipment.

6.3.2 Handling cards

This operation may be necessary, especially for preconfiguring the switches of a card or installing a daughter card on this same card.
Attention :*All the cards cannot be hot-unplugged. Refer to the list below.*

The following cards can be removed or inserted when powered on in a cabinet:

- UCV-D, RUCV-D and IUCV-D (AXD cabinet)
- LA16X, LA16X-8, LN16X, LN16X-8, LH16X, LH16X-8, LD4N, LD4X (AXD, AXL, AXS, AXS12 and AXS6 cabinets).

All the other cards must be powered off before being removed from or inserted in an AXD, AXL, AXS, AXS12 or AXS6 cabinet. For this, it is necessary to power off the iPBX (see Section 6.4).

Nota : For the IPS card, it is advisable to stop the IPS card before powering off the iPBX. Note that there is a minor risk of information loss if the IPS card is powered off before it is stopped.

For cards that can be removed while the system is running

- **Disable** the card. See Aastra Management Portal operating manual
- Remove the card from the cabinet.
- Place the card on an antistatic envelope.
- Carry out the necessary operation on the card (reconfiguring the switches or inserting a daughter card).
- Re-insert the card in the cabinet.
- **Activate** the card. See Aastra Management Portal operating manual

For cards that cannot be removed while the system is running

- Stop the iPBX (refer to the Section Stopping the system (AXD, AXL, AXS, AXS12 and AXS6)).
- Remove the card from the cabinet.
- Place the card on an antistatic envelope.
- Carry out the necessary operation on the card (reconfiguring the switches or inserting a daughter card).
- Re-insert the card in the cabinet.
- Restart the iPBX.

6.3.3 Adding a CLX card (AXD, AXL, AXS, AXS12 and AXS6)

The iPBX can be fitted with one or more expansion cards to increase the system capacity.

In an iPBX, it is possible to install all types of expansion cards according to the existing configuration and hardware configuration rules.

Attention : *Except for the IPS card, a CLX card is only authorised in the main cabinet of an iPBX.*

CONTRAINTE

- Refer to section 3.5 to check the constraints imposed by the hardware configuration rules.
- Check any particular installation and wiring details for the card to be added (see Sections 4.6 to 4.14).
- The configuration data needs to be changed if the system is expanded. Before adding new components, the data must be saved on hard disk or floppy.
- Immediately after installing and programming any new components, you should make a second backup, to save the system's new configuration.

Procedure

- Back up the customer configuration.
- Check the compatibility between the card to be installed and its slot in the main or expansion cabinet (see section3.5).
- Check that the cards fitted with configuration microswitches are configured correctly (see sections 4.13 to 4.14).
- Check that the cards which can be fitted with daughter cards (according to the customer's installation) are equipped correctly (see Sections 4.6 to 4.14).
- If required, install the daughter cards on the cards requiring them.
- Stop the iPBX.
- (1) An LD4NX card can be hot-plugged in an AXD, AXL, AXS, AXS12 or AXS6 iPBX in normal operation.
- (2) It is advisable to stop the IPS card before powering off the iPBX.
- Remove the blanking plate:
  - Turn the plate 1/4 turn locks by 1/4 turn (see section 4.1).
  - Remove the blanking plate of the slot where the card is to be installed.
- Insert the card in the required slot and slide the card along the card guides until it clicks into place.
- Lock the card in place using the 1/4 turn locks (see Section 4.1).
- Install the cables on the card’s front panel.
- Restart the iPBX.

- Check the status of the indicators of the added card and those of the CPU card.
- Activate the card from the operating console.
- Program any additional equipment associated with the card.
- Perform the card operating test.
- Save the configuration.

6.3.4 Adding an equipment card (AXD, AXL, AXS, AXS12 and AXS6)

The iPBX can be fitted with one or more expansion cards to increase the system capacity.

In an iPBX, it is possible to install all types of expansion cards according to the existing configuration and hardware configuration rules.

An equipment card can be hot-plugged in the main cabinet or expansion cabinet of an iPBX.

CONTRAINTE

- Refer to section 3.5 to check the constraints imposed by the hardware configuration rules.
- Check any particular installation and wiring details for the card to be added (see Sections 4.6 to 4.14).
- The configuration data needs to be changed if the system is expanded. Before adding new components, the data must be saved on hard disk or floppy.
- Immediately after installing and programming any new components, you should make a second backup, to save the system's new configuration.

Procedure

- Check the compatibility between the card to be installed and its slot in the main or expansion cabinet (see section3.5).
- Check that the cards fitted with configuration micro-switches are configured correctly (see Sections 4.13 to 4.14).
- Remove the blanking plate:
  - Turn the plate 1/4 turn locks by 1/4 turn (see Section 4.1).
  - Remove the blanking plate from the slot where the card is to be installed
- Insert the card in the required slot and slide the card along the card guides until it clicks into place.
- Lock the card in place using the 1/4 turn locks (see Section 4.1).
- Install the cables on the card’s front panel.
- Activate the card from the operating console.
- Program any additional lines or sets associated with the card.
- For a subscriber card, assign a directory number to each extension and put all the extensions in service (see Section 1.3).

6.3.5 Adding a daughter card on an expansion card (AXD, AXL, AXS, AXS12 and AXS6)

Adding a daughter card increases the capacity of an expansion card.

CONTRAINTE

- The configuration data needs to be changed if the system is expanded. Before adding new components, first back up the data.
- Immediately after installing and programming any new components, you should make a second backup, to save the system's new configuration.

Procedure

Important : *Before removing the card to be equipped from the cabinet, check that it is hot-unpluggable. See Section 6.3.2.*

- Remove the card on which you will be installing the daughter card.

Depending on the CLX card or equipment type, see Section 6.3.2 for the operation.

- Install the daughter card(s) on the appropriate connectors. Installing a daughter card on a card may require using spacers. Daughter cards are usually screwed onto the cards.
- Check the configuration of the card to be equipped. If required, change the position of the micro-switches according to the new configuration of the card (see Sections 4.14).
- Depending on the type of card, follow the installation procedure described in Section 6.3.2.

6.3.6 Adding EIP cards to an UCV CPU card

The UCV cards of AXD, AXL, AXS, AXS12 and AXS6 iPBXs can be fitted with two EIP daughter cards No. 1 and EIP card No. 2 to manage VoIP calls. These two daughter cards have 8 or 32 channels each for signal processing.

The internal IP address of the IP cards must be declared on the same sub-network as that of the CPU card. See Aastra Management Portal operating manual.

These cards are fitted on the UCV card's CPU card:

Depending on the case, one or two EIP cards can be fitted:

- Only one EIP card (EIP 1) on connector J13
- Two EIP, EIP 1 cards on connector J13 and EIP 2 on connector J14.

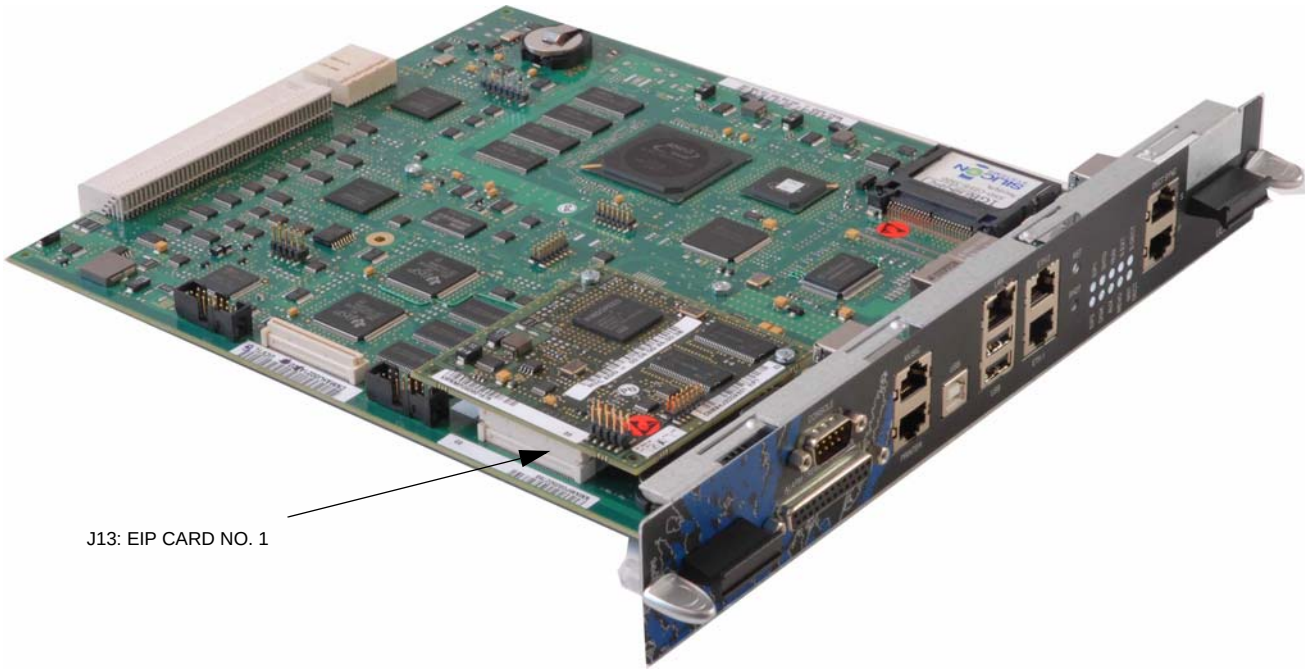


Figure 6.1 *CPU CARD FITTED WITH AN EIP CARD*

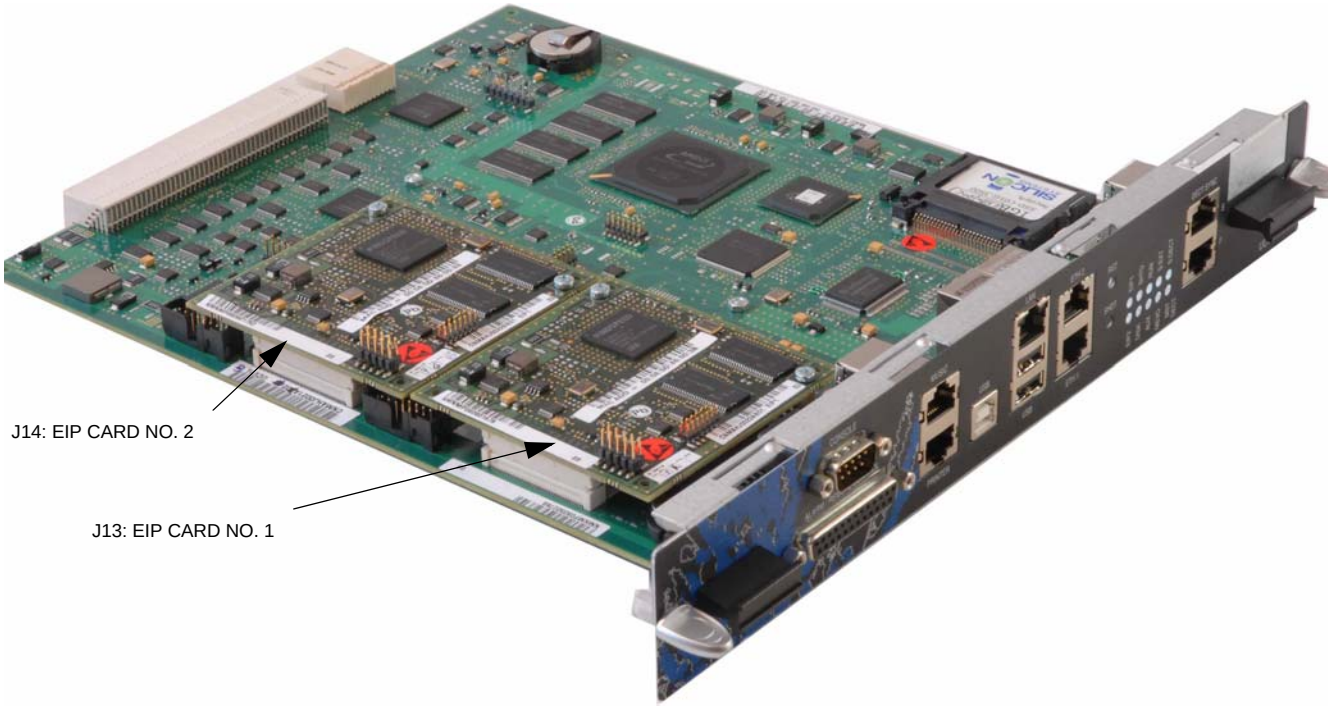


Figure 6.2 *CPU card fitted with two EIP cards*

Installing a daughter card on a card requires the use of spacers. The EIP cards are screwed onto the cards.

Combining 32-channel and 8-channel EIP cards

Both EIP cards must not have the same capacity on the same UCV card. For example, a CPU card may be fitted on J13 with a 32-channel EIP card and on J14 with an 8-channel EIP card.

On a DUPLEX system, this combination must be identical on the passive and active cards.

6.3.6.1 Adding EIP cards for AXD configuration

6.3.6.1.1 Simplex AXD configuration

CONTRAINTE

- This configuration implies stopping the system.
- The configuration data needs to be changed if the system is expanded. Before adding new components, first back up the data.
- Immediately after installing and programming any new components, you should make a second backup, to save the system's new configuration.

Procedure

- Back up the configuration.
- Power off the iPBX.
- Remove the UCV card on which you will be installing the daughter card.
- Install the EIP cards on the appropriate connectors. Installing a daughter card on a card requires the use of spacers. The daughter cards are screwed onto the cards.
- Re-insert the UCV card fitted with EIP cards.
- Power on the system (expansion cabinets first then the main cabinet).

See Aastra Management Portal operating manual for the different phases.

- Declare the network parameters of the EIP cards.

Nota : *The internal IP address of the IP cards must be declared on the same sub-network as that of the CPU card.*

- Activate the EIP cards.
- Check the status of the EIP indicators on the front panel (see Sections 4.3 to 4.14).
- Connect the EIP cards to the network.
- Save the configuration.

6.3.6.1.2 Duplex AXD configuration

CONTRAINTE

The same number and type of EIP cards (32 or 8 channels) on each UCV-D card with the same slot.

This configuration requires changing the system status, which results in the loss of on-going calls (see below).

The configuration data needs to be changed if the system is expanded. Before adding new components, first back up the data.

Immediately after installing and programming any new components, you should make a second backup, to save the system's new configuration.

Procedure

- Back up the configuration.
- Remove the passive UCV-D card.
- Install the EIP cards on the appropriate connectors.
- Re-insert the (passive) UCV-D card fitted with EIP cards.

See Aastra Management Portal operating manual for the different phases.

- Change the passive CPU card to “active card” mode.
- Declare the network parameters of the EIP cards.

Nota : *The internal IP address of the IP cards must be declared on the same sub-network as that of the CPU card.*

- Activate the EIP cards.
- Check the status of the EIP indicators on the front panel (see Sections 4.3 to 4.14).
- Connect the EIP cards to the network.
- Remove the passive UCV-D card.
- Install the EIP cards on the appropriate connectors.
- Re-insert the (passive) UCV-D card fitted with EIP cards.

The IP settings of the EIP cards on the second card will be automatically taken into account later by the software (same settings on both CPU cards).

- Save the configuration.

6.3.6.2 Adding EIP card(s) for AXL, AXS, AXS12 and AXS6 configuration

Same procedure as in Simplex AXD configuration. See Section 6.3.6.1.1.

6.3.7 Adding an expansion cabinet

The iPBX can be fitted with one or more expansion cards to increase the system capacity.

Avertissement : *The configuration data needs to be changed if the system is expanded. Before adding new components, first back up the data.*

6.3.7.1 Adding an expansion cabinet (AXD)

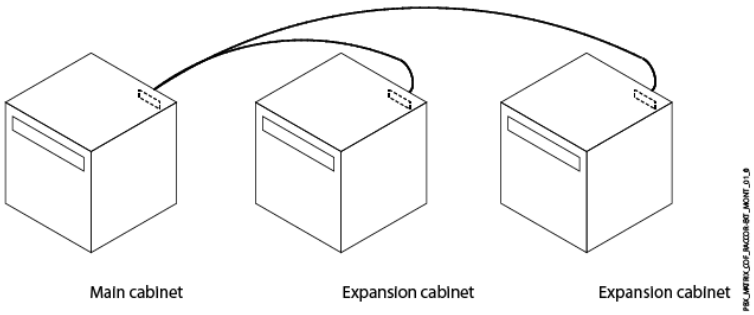
Procedure

- Back up the customer configuration.
- Power off the iPBX.
- Install the expansion cabinet cards.
- Install the expansion cabinet and connect it to earth (see Sections 3 and 6.2.5).
- Connect the expansion cabinet to the main cabinet using the connection cable(s), according to the simplex or duplex configuration of the cabinets and colour codes (see Sections 4.5.4.1).
- Install the cable on the front panel of the expansion cabinet cards.
- Install the battery cabinet if available.
- Connect the two battery leads.
- Make sure the polarity is correct.
- Connect the battery to the "48V BATT." connector located at the back of the AXD cabinet.
- Connect one end of the mains cable to the power supply module(s) of the expansion cabinet and the other end to a grounded mains power point.
- Power on the iPBX (expansion cabinets first then the main cabinet).
- Check that the yellow and green indicators on the front panel of the cabinet sub-assemblies are lit, and that no red indicator is on (refer to Sections 4.3 to 4.14 to check that the operating conditions shown by the indicators are correct).
- From the AMP, check that the software has detected the cabinet expansion.
- Configure the new expansion cabinet equipment *(see AMP operating manual).*
- Save the configuration.

6.3.7.2 *Adding an expansion cabinet (AXL)*

Procedure

- Back up the customer configuration.
- Power off the iPBX.
- Install the expansion cabinet cards.
- Install the expansion cabinet and connect it to earth (see Sections 3 and 6.2.5).
- Connect the expansion cabinet to the main cabinet using the connection cable(s).
  - **For an AXL extension connect to its two expansion cabinets:**



- Install the cable on the front panel of the expansion cabinet cards.
- Install the battery cabinet if available.
- Connect the two battery leads.
- Make sure the polarity is correct.
- Connect the battery cable to the “48 V BATT.” connector of the power supply module located on the front panel of the power supply module on an AXL iPBX.
- Connect one end of the mains cable to the power supply module(s) of the expansion cabinet and the other end to a grounded mains power point.
- Power on the iPBX (expansion cabinets first then the main cabinet).
- Check that the yellow and green indicators on the front panel of the cabinet sub-assemblies are lit, and that no red indicator is on (refer to Sections 4.3 to 4.14 to check that the operating conditions shown by the indicators are correct).
- From the AMP, check that the software has detected the cabinet expansion.
- Configure the new expansion cabinet equipment.
- Configure the new expansion cabinet equipment *(see AMP operating manual).*
- Save the configuration.

6.3.7.3 *Adding an AXS, AXS12 and AXS6 expansion cabinet*

Procedure

- Back up the customer configuration.
- Power off the main cabinet.
- Remove the upper cover of the main cabinet to insert the internal ribbon cable required for extension.
- Remove the internal rear plate to allow the connection of the expansion ribbon cable.
- Connect the expansion ribbon cable (reference: BHR0129A).
- Screw on the expansion connector to the rear side of the main cabinet, using only the two screws provided with the kit.
- Reinstall the rear internal plate.
- Put back the upper cover of the main cabinet.
- Install the expansion cabinet cards.
- Install the expansion cabinet and connect it to earth (see Sections 3 and 6.2.5).
- Connect the expansion cabinet to the main cabinet using the connection cable (BHT8212A).
- Install the cable on the front panel of the expansion cabinet cards.
- Install the battery cabinet if available.
- Connect the two battery leads.
- Make sure the polarity is correct.
- Connect the battery cable to the “48 V BATT.” connector of the power supply module located at the back of the cabinet on an AXS, AXS12 or AXS6 iPBX.
- Connect one end of the mains cable to the power supply module(s) of the expansion cabinet and the other end to a grounded mains power point.
- Power on the iPBX (expansion cabinets first then the main cabinet).
- Check that the yellow and green indicators on the front panel of the cabinet sub-assemblies are lit, and that no red indicator is on (refer to Sections 4.3 to 4.14 to check that the operating conditions shown by the indicators are correct).
- From the AMP, check that the software has detected the cabinet expansion.
- Configure the new expansion cabinet equipment.
- Configure the new expansion cabinet equipment *(see AMP operating manual).*
- Save the configuration.

6.3.8 Adding an AXD power module

6.3.8.1 ADS350XD and ADS300XD compatibility

As from release R5.1, the new ADS350XD (AHJ0033) module replaces the previous ADS300XD module.

The previous ADS300XD module is compatible with R5.1 C.

It is not possible to combine ADS350XD with ADS300XD in the same cabinet.

The ADS350XD module supports the management of the following alarm types:

- Rectifier
- Converter
- Fans
- Temperature.

After an ADS350XD or VADS350 module is replaced, hardware identification update on AMP takes place automatically.

For a Duplex system, refer to the corresponding paragraph.

6.3.8.2 Cabinet fitted with ADS300XD module

6.3.8.2.1 Adding an ADS350XD module

This procedure applies to the power modules of an AXD.

An ADS350XD power supply module is added to a simplex AXD cabinet in order to secure the iPBX operation. It is installed in place of the VADS ventilation module. The cabinet thus has two power supply modules.

When one power supply module is out of service, the second power supply module takes over the entire load (only one power supply is enough to supply the power required by a cabinet under full load). This switchover is transparent for the cabinet equipment. There is, thus, no service interruption.

Procedure

- Back up the customer configuration.
- Remove the ventilation module.

Avertissement : *The operator has about 90 seconds to make the replacement. After 90 seconds, the cabinet is automatically powered off.*

- Unscrew the two securing screws on the front panel of the ventilation module.
- Remove the ventilation module using its handles.
- Install the power supply module.
- Check that the power supply module to be installed is powered off (“I/O” switch set

to “O”).

- Insert the power supply module in its slot and push it fully home.
- Secure the power supply module onto the iPBX structure using its two screws.
- Connect the mains cable on the front panel of the power supply module.
- Power on the power supply module.

6.3.9 Changing to DUPLEX configuration for AXD

A second UCV-D CPU card is added to a simplex AXD main cabinet (and RUCV-D for an expansion cabinet) to secure the iPBX operation. Two specific slots (see 3) are reserved for the installation of CPU cards.

In a configuration with two CPU cards (duplex configuration), one card is active and the other passive. In case of hardware failure on the active card, the passive card takes over and becomes active.

Preliminary operations

- Refer to section 3.5 to check the constraints imposed by the hardware configuration rules.
- Check any particular installation and wiring details for the card to be added (see Sections 4.3 to 4.14).

Avertissement : *The configuration data needs to be changed if the system is expanded. Before adding new components, first back up the data.*

Procedure

- Back up the customer configuration.
- Check the compatibility of the card to be inserted (UCV-D/RUCV-D) and its slot in the (main/expansion) cabinet.
- If some daughter cards are fitted on the card (depending on the customer's installation), check that they are correctly installed (see Section 4.3) and that the VoIP capacity is the same on the two UCV-D cards (the same number of EIP daughter cards on both UCV-D cards).
- If required, install the daughter cards on the cards requiring them.
- Remove the blanking plate:
  - Turn the plate 1/4 turn locks by 1/4 turn (see Section Figure 4.1).
  - Remove the blanking plate of the slot where the card is to be installed.
- Install the cabinet connection cables.

Nota : *For a duplex configuration comprising one or two expansion cabinets, a RUCV-D card is added to each expansion cabinet. Connect the expansion cabinet to the main cabinet using the connection cable and respecting the colour code (see Sections 4.5.4.1 and 4.5.4.2).*

A cable for connecting the main cabinet is provided with each RUCV-D card.

- Insert the card into its slot.
- Slide the card along the card guides until it clicks into place.
- An UCV-D/RUCV-D card can be hot-plugged in a working AXD iPBX.
- Lock the card in place using the 1/4 turn locks (see Figure 4.1).
- Activate DUPLEX mode from the AMP. See Aastra Management Portal operating manual.

Attention : *Wait until the passive card is completely loaded and initialised before validating the duplex configuration.*

A special menu is used to change the simplex/duplex iPBX configuration. See Aastra Management Portal operating manual.

Selecting duplex configuration enables the system to take into account the second UCV-D (and RUCV-D) card and ensure as soon as possible full synchronisation between the active card and the new passive card (software, data, announcements, IVR, etc.). This passive card then becomes active during the next switchover.

Note : *There is a switchover when a hardware anomaly is detected on the active UCV-D card, or if the card is removed intentionally. It may also be caused by the MMC. See Aastra Management Portal operating manual. In the same menu check that the passive card has actually been taken into account by the system (status: “In service”).*

- Configure any additional devices associated with the card.
- Back up the customer configuration.

6.4 Stopping the system (AXD, AXL, AXS, AXS12 and AXS6)

The same procedure for all these cabinet types.

You must respect the order of this procedure:

- On the CPU card, press briefly the "**SHTD**" (Shutdown) button. Wait for the green "**SHTD"** indicator light to be steady on, and for the other ones to go off.
- Power off the power modules (I/O push button on O).

6.5 Stopping the system (AXD, AXL, AXS, AXS12 and AXS6)

Note : *Only restart modes from the CPU card front panel are described in this paragraph. Restart requests from Aastra Management Portal are not described here. See Aastra Management Portal operating manual .*

The same procedure for all these cabinet types.

From the buttons on the CPU card front panel, you have to distinguish between two types of restart operations:

- Restart with OS reboot (shutting down and restarting the iPBX)
- Forced restart (not recommended in normal operation).

Restart with OS reboot (shutting down and restarting the iPBX)

- Pressing and holding down the "**SHTD**" button (5 seconds), triggers an "OS reboot" (shutdown + iPBX restart).
- The system restarts.
- Wait some moments before accessing AMP again.

Forced restart (not recommended in normal operation)

- Press "**RST**". This button should only be used as last resort if pressing the "**SHTD**" button does not work.
- The system restarts.
- Wait some moments before accessing AMP again.

After the restart operation, check the status of the indicators on the front panel of the cabinet (see Section Description des sous-ensembles).

6.6 Viewing the IP address in case of loss (offline)

Access via the web interface will no longer be possible if the system's IP parameter value is lost.

In this case, consultation in serial mode is available from a Windows PC equipped with the "Hyperteminal" application.

Access is provided locally on the COM port of the CPU card, using a NULL MODEM cable connected between the COM port of the CPU card and the PC COM port.

- Open a Hyperterminal window and configure the connection as follows:
  - Bits per second: 115200 bits/s
  - Data bits: 8
  - Parity: none
  - Stop bits: 1
  - Flow control: None
- Restart the cabinet.
- Upon display of "**`Identification starting`**"
- Press **Ctrl** + **I**
- The screen then displays the different configuration modes.

```
Configuration mode (F/T/S/P/E)
- F: Factory mode
- T: Total mode
- S: Standard mode
- P: Password reset
- E: for Exit
```

- Select "**`S`**" mode to display the network configuration.
- The screen then displays the cabinet's network configuration.
- Enter "**`N`**" in this screen and in the next ones if the configuration should not be modified.

6.7 Updating the software of a simplex Aastra system R5.1 to R5.2

Note : *See also Aastra Management Portal operating manual.*

6.7.1 Principle

This procedure for updating to R5.2 applies to systems running already in R5.1 (AXD, AXL, AXS, AXS12 and AXS6).

To keep the IVB function, you must upgrade a 1GB CF card to 2 GB; during this upgrade to R5.2 refer to Chapter 6.12 - Upgrading from a 1 GB compact flash card to a 2 GB compact flash card.

A backup must be made before starting the upgrade procedure.

The new software licence associated with R5.2 must be retrieved before starting the procedure.

The different modes are:

- From AMP,
- From Aastra Management AM 7450.

Nota : *During the restart phase following the upgrade phase, communications are interrupted.*

6.7.2 Upgrading the software from AMP

The function is executed from the AMP, in the menu **SYSTEM/Software maintenance/ Upgrade**.

A software upgrade may be of several types:

- New and complete officially available release (SA), example: X_A5000_R5.2_SP1_B700.tar.gz
- Software upgrade for a given SA release, which corresponds to functional enhancements, example: X_A5000_R5.2_RC_D101.tar.gz
- Upgrade for a given release, which only corresponds to anomaly corrections, example: X_A5000_R5.2_SP1_B701.tar.gz.

The A5000_Infra software delivery directory may, therefore, contain several directory types corresponding to these different types of upgrade:

- **Upgrade** for software upgrade releases
- **Delta** for anomaly corrections.

These software elements will be loaded on the Compact Flash card located on the Aastra series CPU card.

Two media types can be used:

- CDROM

- USB key.

The system version must be updated if the edition of the system on the CD is above the edition of the PBX system to be updated.

- The CDROM system edition is in the file name SYS5000.1_R1.1A_AA_00.tar.gz (11AA).
- The iPBX system edition is in the menu System/Info/Software Identification, file: UCV1LV111_Gen1.1AedB (11AB).

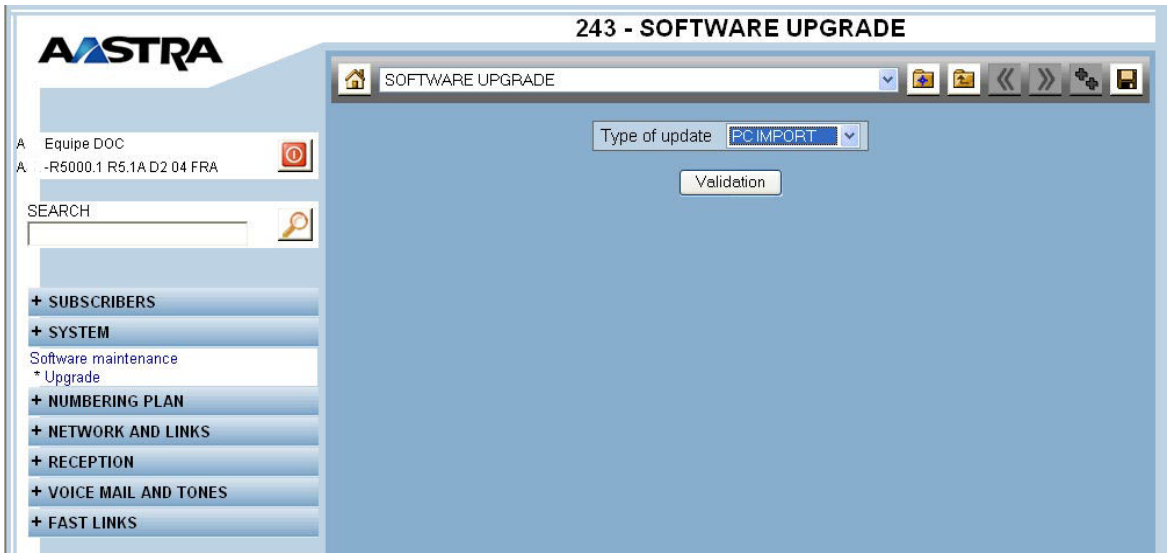
Insert the CD in the client PC on which the software update commands are executed.

6.7.2.1 Loading update files

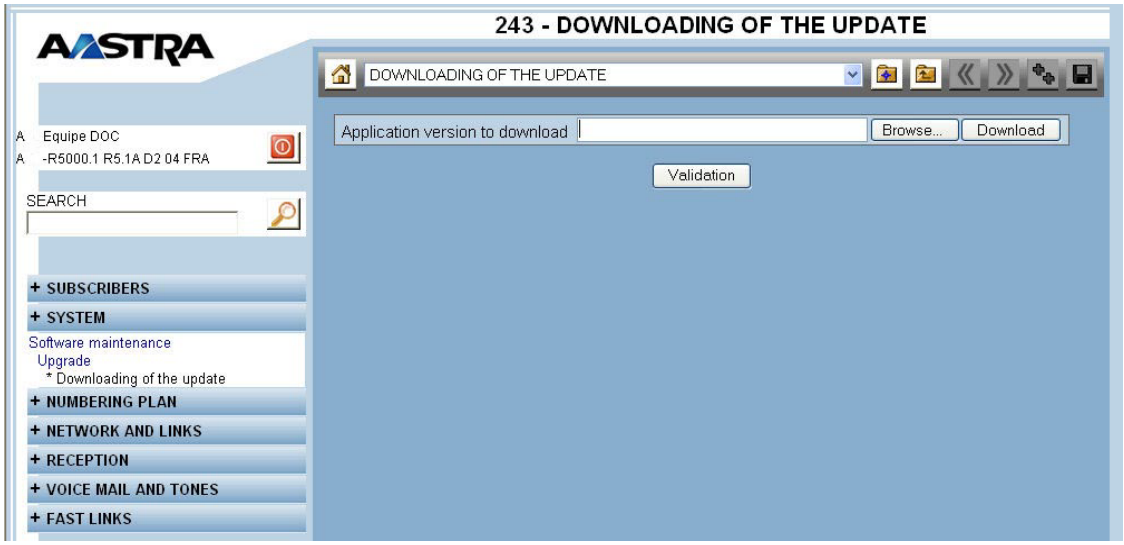
The available modes are:

- PC import
- iPBX USB key

6.7.2.1.1 By PC import



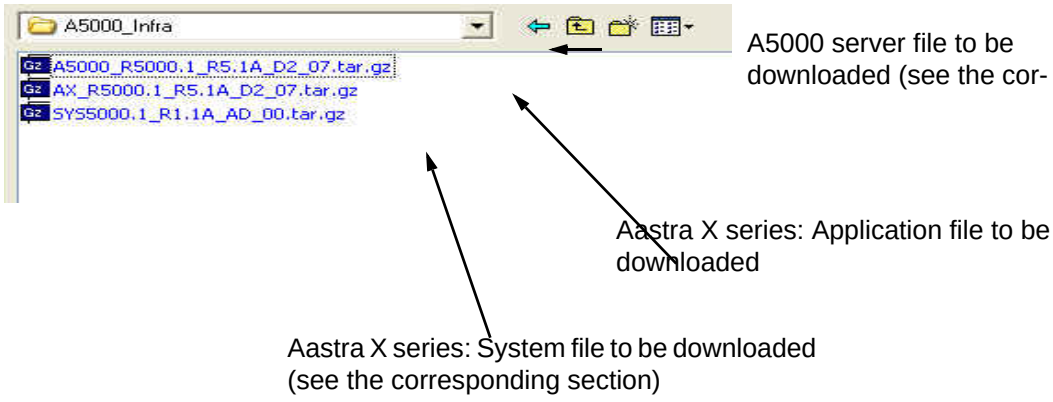
- Select " **PC IMPORT** ".
- Click "**Validate**".



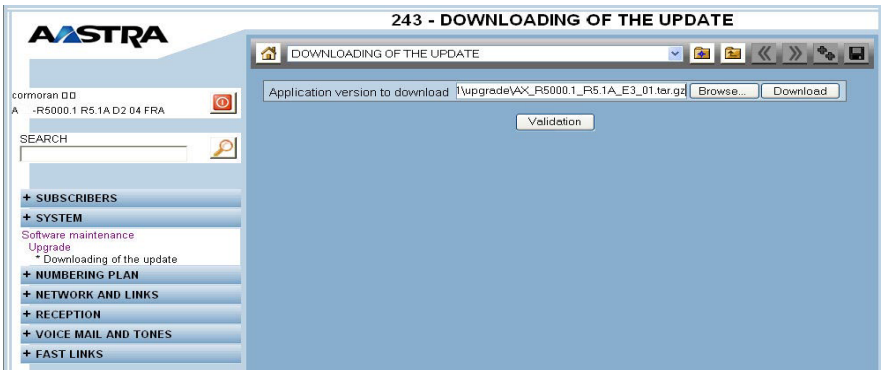
- Indicate the access path for the directory containing the file, using the "**Browse**" key.
- If the path is known, enter it directly in the corresponding field.

The file for the new version of the Aastra 5000 application is available in the **A5000_Infra** folder or sub-folder of the CD-ROM:

- **AX_R5000.2_R5.2A_A5_01.tar.gz** (example)


A5000_Infra
A5000_R5000.1_R5.1A_D2_07.tar.gz
AX_R5000.1_R5.1A_D2_07.tar.gz
SYS5000.1_R1.1A_AD_00.tar.gz
A5000 server file to be downloaded (see the cor-
Aastra X series: Application file to be downloaded
Aastra X series: System file to be downloaded (see the corresponding section)

Upgrading the application release

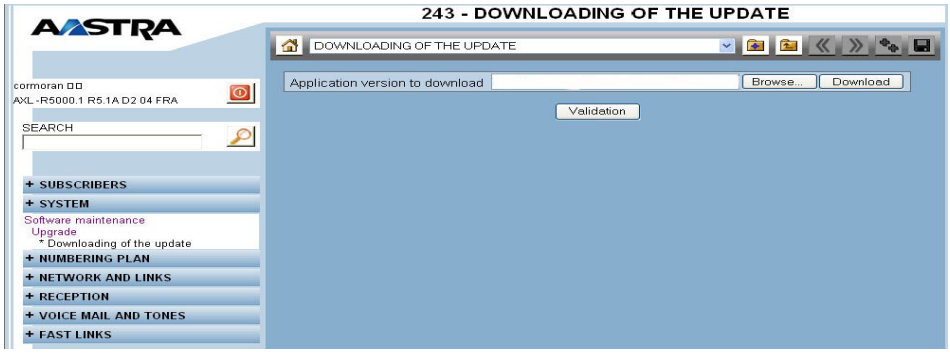


- Select " **Download** ".

A message indicates the progress of the downloading phase.

At the end of the downloading operation, if the system version needs to be updated, the system proposes it automatically. In this case, the system must be updated (refer to the **System version update** phase).

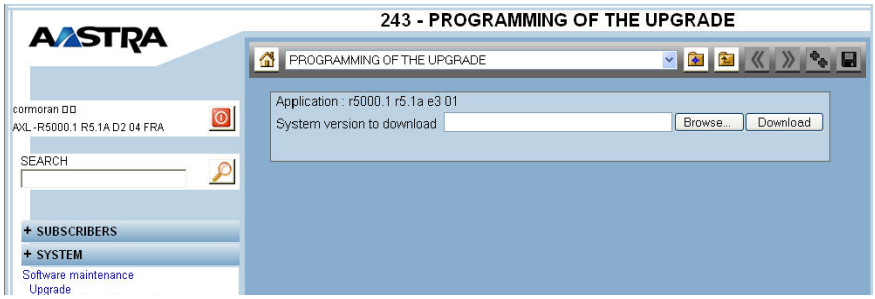
If the system does not propose it, it is not necessary to update the system version. The screen displays in this case.



- Click "**Validate**".
- The switchover window is then activated (See Section 6.7.2.3).

Upgrading the system version

After upgrading the application release and if the system version must be updated, the following screen is displayed:



- Indicate the access path for the directory containing the file, using the "**Browse**" key.
- If the path is known, enter it directly in the corresponding field.

The file for the new version of the (integrated) OS is available in the **A5000_Infra** folder of the CD-ROM:

- **SYS5000.1_R1.2A_A4_00.tar.gz** (example)

- Select " **Download** ".

A message indicates the progress of the downloading phase.

At the end of the downloading operation, the switchover window is activated. (See Section 6.7.2.3).

6.7.2.2.2 By USB key

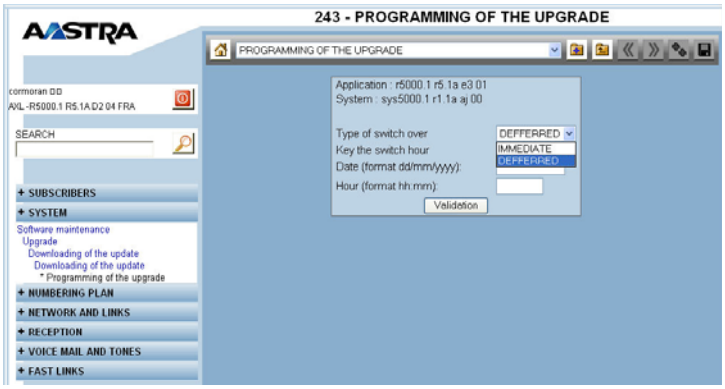
The procedure is the same as the one for PC IMPORT: select the files from the specific directories that must be created on the USB key:

- Create a **system\ext** directory under the system file root.
- Create a **backup\ext** directory under the application file root.

6.7.2.3 *Switchover*

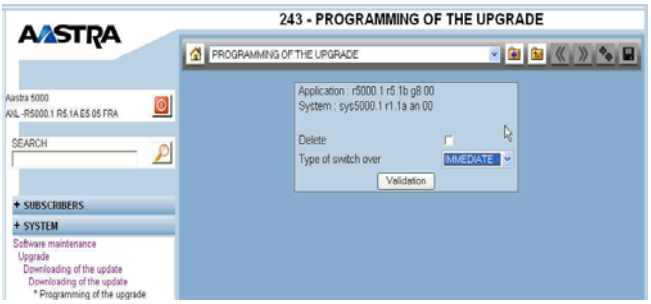
After the application release or system version download, system switchover to the new loaded version is proposed according to two modes:

- IMMEDIATE
- DEFERRED.



These two modes are explained in the Aastra Management Portal operating manual.

Immediate switchover

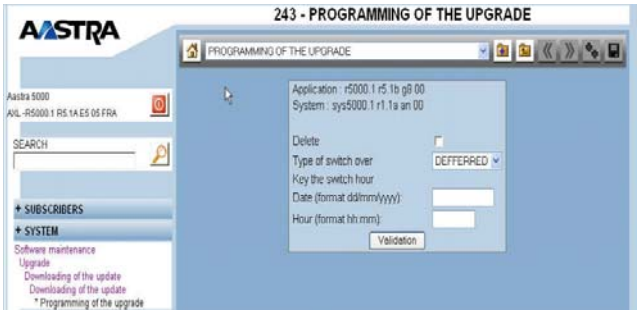


Enter the new unlocking key for release R5.2.

The system restarts automatically after the switchover phase.

The next phase is to validate or save this new release definitely. See to the next paragraph.

Deferred switchover



In this case, the upgrade operation will be run by the system on the date and time indicated in the DATE and HOUR fields.

Enter the new unlocking key for release R5.2.

The system will restart automatically after deferred switchover.

After restarting in R5.2, it is necessary to refresh the browser screen to access AMP. It is advisable to close and restart it.

The next phase is to validate or save this new release definitely. See to the next paragraph.

"**Delete**" checkbox:

By ticking this box and validating, the user can, for one reason or the other (timeout during a session, version error), delete the entire file loaded previously (application and/or system) and restart the upgrade afresh. This prevents, among others, any confusion with the files stored in the (temporary) memory until the switchover phase.

6.8 Upgrading the software of a simplex Aastra system R5.2

Note : *See also Aastra Management Portal operating manual.*

6.8.1 Principle

This procedure applies to systems already working in R5.2 and which the user wishes to upgrade to a release above R5.2.

A backup must be made before starting the upgrade procedure.

The software licence associated with the working R5.2 will be retained for upgrade to later releases.

The different modes are:

- From AMP,
- From Aastra Management AM 7450 (TBC).

Nota : *During the restart phase following the upgrade phase, communications are interrupted.*

6.8.2 Upgrading the software from AMP

The function is executed from the AMP, in the menu **SYSTEM>Software maintenance>Upgrade**.

The upgrade concerns either the Aastra 5000 application, or the OS version, or both.

The procedure is the same as the one described in Section 6.7 (except for the licences which will not be required during switchover because the system keeps the ones obtained during the first upgrade to R5.2).

6.8.3 Restarting and validating the new version

Rappel : *After restarting in R5.2, it is necessary to refresh the browser screen to access AMP. It is advisable to close and restart it. Moreover, it could be necessary to erase the cookies and the temporary files of the navigator to obtain a correct display in the Web browser.*

After the software is upgraded, the installed version is not automatically validated during switchover. You must validate the new version manually after noticing that it is running satisfactorily.

You can validate it through the menu "**SYSTEM > Restart request**".

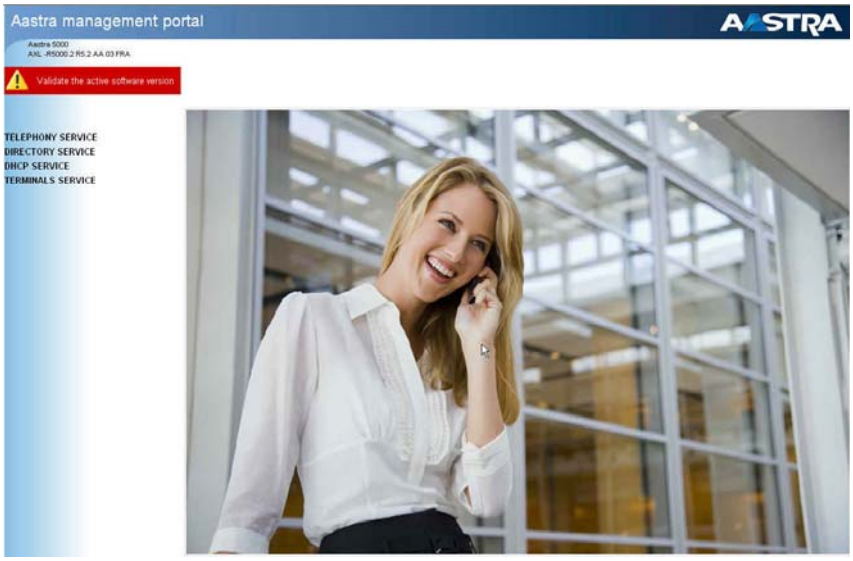
IMPORTANT NOTES:

As long as the new version is not validated:

- it remains "**in test**",
- a red frame is displayed in the menu area indicating that the active version is not valid.
- It is possible to restore the previous version (see **SYSTEM> Restart request**) but the data modified while the software had not been validated will be lost.

Attention :*The restore operation will not be possible on the recovered version.*

- It is not possible to back up data until the software is validated.



It is advisable to validate the new version as quickly as possible (once you observe a normal operation).

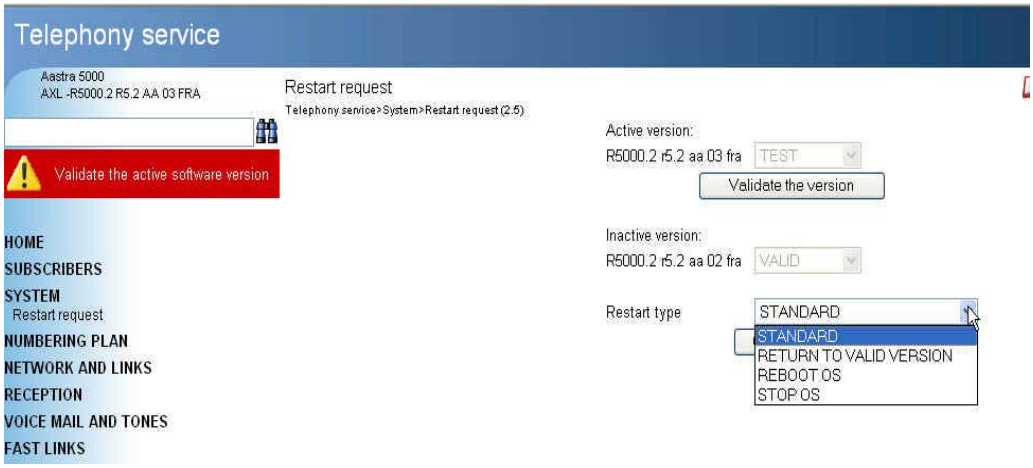
Procedure

Validation and possible cancel requests are proposed in the menu "**SYSTEM/Restart request**" as indicated below.

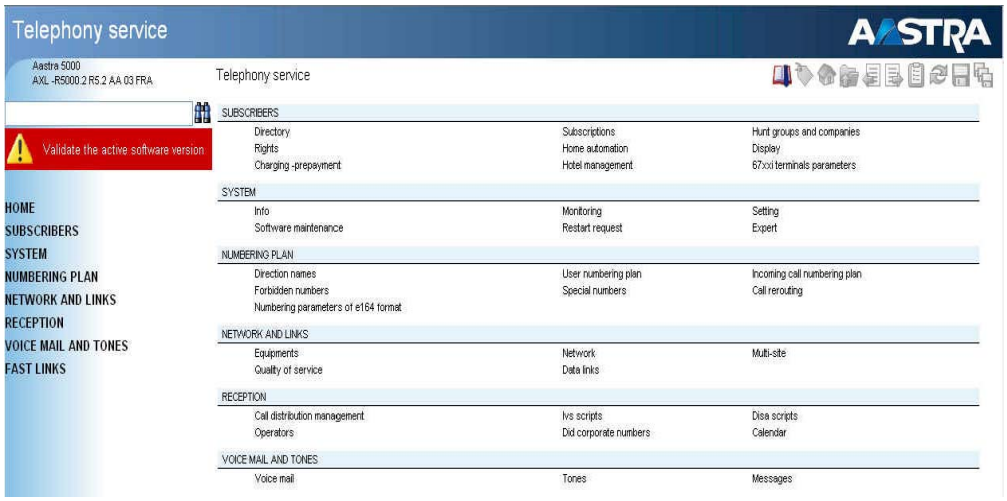
- To validate the release "in test", click “Validate the version”. The system restarts

automatically, declaring the release as valid.

- If you do not wish to validate the release "in test" but to return to the previous release, select "Confirm". The system restarts automatically with the previous release.



This menu is also directly accessible via the TELEPHONY SERVICE menu, by clicking the quick link **Validate the active software version**.



For other options, see Aastra Management Portal (Document Aastra Management Portal AXD-AXL-AXS-AXS12-A5000 Server – Operating Manual).

6.8.4 Upgrading the software from Aastra Management AM 7450

See the document Aastra Management 7450 (AM 7450) User manual.

6.9 Upgrading an AXD in duplex configuration mode

To update a duplex AXD system proceed as follows:

- Update the software of the active UCV-D card using the same procedure as for a simplex configuration (see Section Updating the software of a simplex Aastra system R5.1 to R5.2,

Important : *The procedure must be complete, the system restarted and the new version validated (see Section **Restarting and validating the new version**).*

From the menu **SYSTEM>CONFIGURATION>CARDS>Power supply > duplex**:

- Disable the passive 10x CPU card.
- Disable the passive 10x CPU card.
- Check the passive card's downloading phase, message "**`passive Uc 1-0b download"`**.
- At the end of the passive card downloading phase (20 minutes for a 1 GB compact flash card and 30 minutes for a 2 GB card).
- At the end of the downloading phase, the status of the passive card changes to active, **message `passive Uc 1-0b in service"`**.
- Also check the availability of the following message in the logbook. ,

```
14:38:47 02/07/08                          2
*SERVICE: DUPLICATION       IN SERVICE*
```

Note : *During update, the status of the RUCV-D card(s) changes to "IN ALARM".*

6.10 Backing up and restoring the configuration

Backup and restore operations are performed from Aastra Management Portal. See Aastra Management Portal operating manual.

6.11 Remote access modes

The user interface remote access modes are:

- Access via an analogue modem
- Access via an analogue ISDN modem
- Access via an ISDN router.

6.11.1 ACCESSING THE USER INTERFACE VIA AN ANALOGUE MODEM

From a PC, set up a connection with the external analogue modem via the PC's integrated modem.

Then access the web browser installed on this PC (Internet Explorer, for example).

Enter the IP address, 192.168.0.101, the default value defined for this connection type via the operating console in secure mode:

- **https://192.168.0.101** (secure access mode).

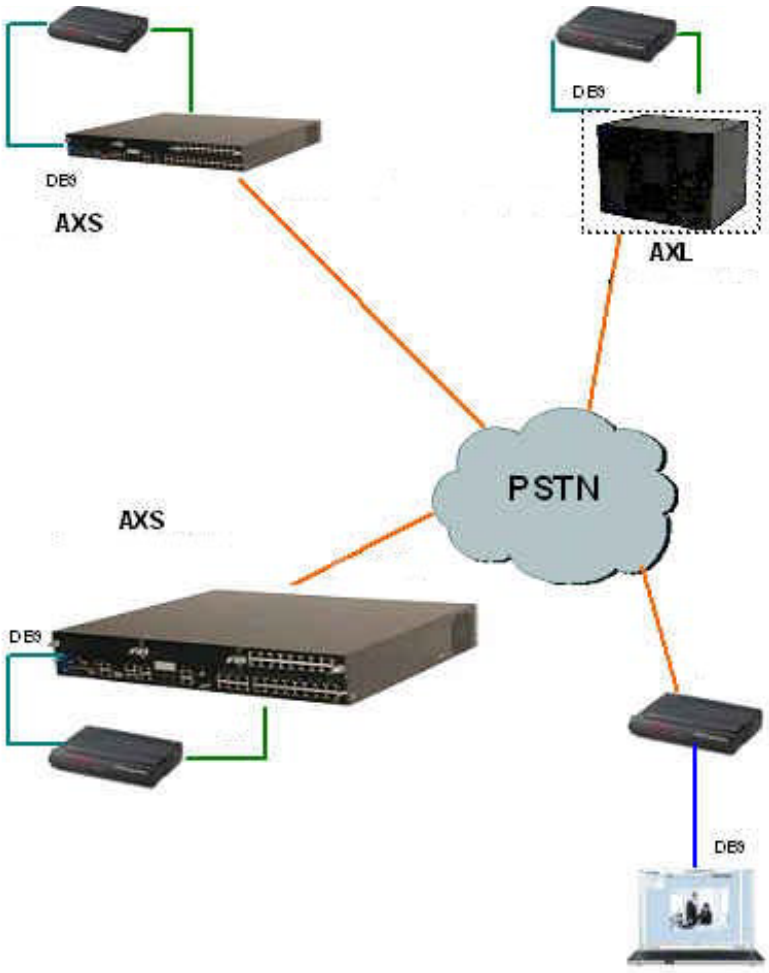
Connectors

Only one access per Aastra X series system.

The analogue connection requires an external analogue modem between the gateway and analogue network socket.

Nota : *Aastra offers at the price a 56k US Robotics analogue modem.*

A cable, DB25M, on the modem side - modem - DB9F on the gateway side, is used to connect the modem to the gateway.



Configuring the Aastra X series system

- Assign a DID number.

Modem configuration

- Automatic: controlled by the Aastra X Series Gateway

Hayes commands for analogue US ROBOTICS modem configuration

In case of ppp remote maintenance connection problem on a modem, check your modem's register configuration.

Below is the recommended modem register configuration.

- atS0= 2 off-hook after 2 seconds
- &b1=115200 serial port throughput

To see the register bases, type either **at&v** or **at&i4**.

Attention : *Do not forget to back up using **at&w***

Configuring the PPP connection

In Control Panel

- Click " **Network connections** ".
- Select Create a new connection.
- In **New connection wizard**, click**Next**.
- Tick successively the boxes indicated below:
  - In the **Network connection type** screen, tick **Connection to company network**.
  - Click **Next**.
  - In the **Network connection**screen, tick **Remote access connection**.
  - Click **Next**.
  - Choose the modem type on the list proposed.
  - Click **Next**.
  - In the **Connection name** screen, fill in the **Company name** field.
  - Click **Next**.
  - In the screen **Enter the phone number to dial** , enter the call number for this connection via modem.
  - Click **Next**.
  - In the **Connection availability** screen, tick **All users**.
  - Click **Next**.

The PPP configuration has been completed.

In the " **Start** " menu, " **Parameters** " tab, start the connection to the PBX.

- Login: **user**
- Password: **guest**

Accessing the AMP user interface

Open a web browser installed on the operating console (Internet Explorer, for instance).

Enter the address reserved for this access mode: https://192.168.0.101 (secure access mode).

Some security windows for this "https" access mode are then displayed successively; enter “YES” for each of them.

A login window opens.

6.11.2 ACCESSING THE USER INTERFACE (AMP) VIA AN ISDN MODEM

Configuring the Aastra X series system

In ISDN, since the Aastra X series system is connected to the operator network, you have to:

- Define a subscriber (by default, subscriber 796).
- Assign an "HSCX modem" set type to this subscriber ("terminals allocation).
- Assign a DID number to the iPBX.

Configuring the remote PC

- On the remote operation PC, there must be an “ISDN modem”.

ISDN modem configuration

The ISDN modem is connected (depending on the models) to the serial port or USB port of a PC on the operator ISDN line, or on an S0, S2 bus.

Configuring the ISDN modem access on the Aastra X series system

- S0: Call without ID at Yes (menu 414)

Examples of external ISDN modems: Olitec ISDN USB V2 or V3, Bewan gazel 128 USB, Zyxel omi.net USB.

It is possible to use a PCI card to be integrated in the PC (with driver installation).

Configuring the PPP connection

In Control Panel

Configuring the PPP connection

In Control Panel

- Click " **Network connections** ".
- Select Create a new connection.
- In **New connection wizard**, click**Next**.
- Tick successively the boxes indicated below:
  - In the **Network connection type** screen, tick **Connection to company network**.
  - Click **Next**.
  - In the **Network connection**screen, tick **Remote access connection**.
  - Click **Next**.
  - Choose the modem type on the list proposed.
  - Click **Next**.
  - In the **Connection name** screen, fill in the **Company name** field.
  - Click **Next**.

- In the screen **Enter the phone number to dial** , enter the call number for this connection via modem.
- Click **Next**.
- In the **Connection availability** screen, tick **All users**.

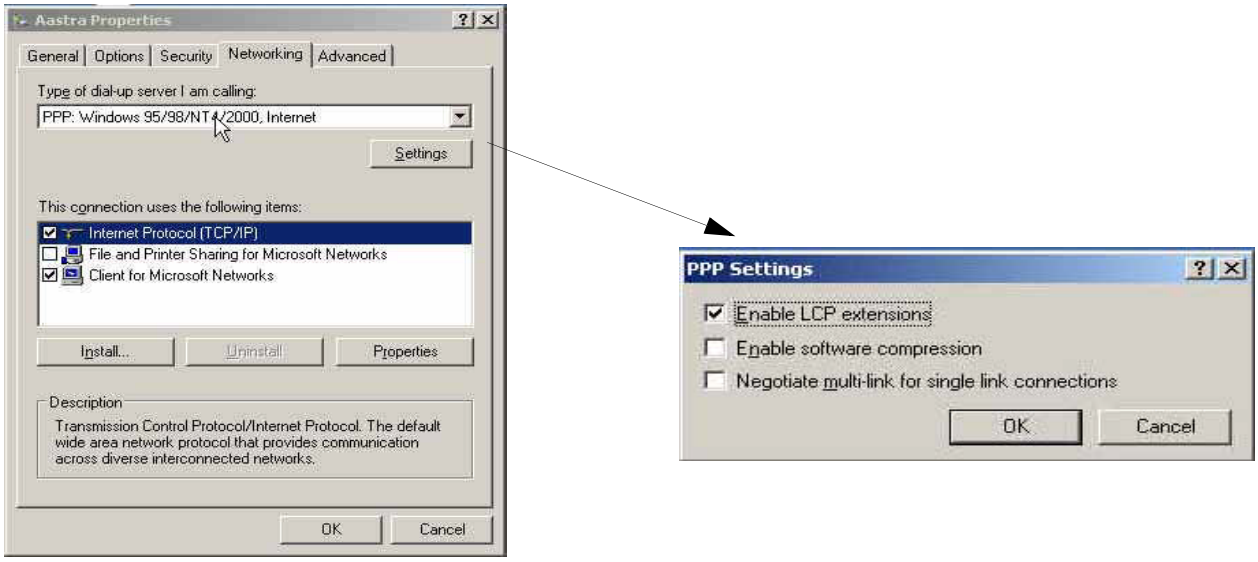
Click **Next**.

The connection has been configured.

In the " **Start** " menu, " **Parameters** " tab, start the connection to the PBX.

- Login: **user**
- Password: **guest**
- Click **Properties** then successively tick the boxes as indicated below in each tab.
  - In the **Modem properties** tab:
    - Choose the modem type on the list proposed.
    - Enter the call number.
  - In the **Options** tab, tick
    - Indicate connection progress status.
    - **Request for a name, a password, etc**.
    - Request for a phone number.
    - Choose the callback options.
    - Indicate connection progress status.
  - In the **Security** tab, retain the default value.
  - In the **Network management** tab, select and tick the values accordingly as indicated in the following screen:

-



- In the **Advanced** tab, retain the default value.
- Click **OK**.

Access to the AMP browser

- Open a web browser installed on the operating console (Internet Explorer, for instance).
- Enter the address reserved for this access mode: **https://192.168.1.101** (secure access mode).

Some security windows for this "https" access mode are then displayed successively; enter “YES” for each of them.

A login window opens.

6.11.3 ACCESSING THE USER INTERFACE (AMP) VIA AN ISDN ROUTER

In this release (R5.1A), the router must mask the PC address (NAT); the iPBX only sees an IP address on the PPP link (all the others are routed over the LAN port, the connection would not be set up).

6.11.3.1 CONNECTIONS

- ISDN cable: router RJ45, LD4X or LT2 or operator RJ45.
- Ethernet cable: RJ45 -RJ45

PBX CONFIGURATION

- S0 or S2 parameter
- S0: Call without ID at Yes (menu 414)
- S2: Call without ID at yes
- CRC4 management at yes

AMP BROWSER ACCESS

- Open a web browser installed on the operating console (Internet Explorer, for instance).
- Enter the address reserved for this access mode: **https://192.168.1.101** (secure access mode).

6.12 Upgrading from a 1 GB compact flash card to a 2 GB compact flash card

This procedure is used to transfer the entire iPBX configuration from a 1 GB compact flash card to a 2 GB compact flash card and, in particular, to increase the maximum duration of message recording and the number of voicemail boxes (VM):

COMPACT FLASH CARD SIZE	DURATION	NUMBER OF VOICEMAIL BOXES
1 GB		
2 GB	1800 mn (30 h)	1000

This migration concerns the following data:

- Application data
- LDAP data
- Voicemail files (announcements, prompts, IVR, signatures and messages left in the IVBs)
- Local FTP and TFTP server files (sip_sets folder)
- Software files of terminals managed by TMA.

Changing from a 1 GB compact flash card to a 2 GB compact flash card in R5.2 is only necessary to retain the IVB function.

Note : *The 2 GB SWISSBIT CF card is mandatory in R5.3.*

This migration is made using a USB key connected to the PBX and via the menu **SYSTEM/Software maintenance/Compact flash migration** which makes it possible either to back up some data on the key, or to restore this data on the compact flash card.

This menu is used to perform the migration in two phases:

- The first phase consists in backing up the data to be updated, on the USB key. This phase must be carried out in R5.1 while upgrading R5.1 to R5.2
- The second phase consists in restoring this data stored on the USB key on the iPBX. This phase must be carried out in R5.1 while upgrading R5.2 to R5.2

To perform this migration, you basically need to:

1. Connect the USB key to the iPBX (recommended capacity: 1 GB).

Nota : *If the space on the key is not sufficient, the following error message is displayed: " incorrect file size ".*

2. Start the data backup operation.
3. Install the new 2 GB compact flash card on the iPBX.

4. Start the iPBX and configure:
   - The IP address
   - The software licence
   - The countries and languages (the first two must be identical to those defined on the previous card)
   - The TMA, DHCP and FTP services, like on the previous card.
5. Start the data restore operation.
6. After restarting the cabinet, test the release then validate it if satisfactory.
7. Remove the USB key.

6.12.1 Migration process

6.12.1.1 Preliminary operations

For the backup or restore operation to be performed correctly, the system first checks:

- That a USB key is correctly connected and recognised
- That the active and inactive software releases have been validated
- That the automatic TMA related actions have been taken and fully completed
- That the available space on the USB key, in case of backup, or on the compact flash card, in case of restore, is enough for the operation

In case of error, a dialogue box appears and the required operation is not performed.

The exchange directory created by the software is unique on the USB key. This is named **backup_CF**.

Remarque :During backup and restore, it is not possible to access or leave messages on the IVB.

6.12.1.2 Backing up data on the USB key (1 GB recommended)

6.12.1.2.1Procedure

To perform the migration, first connect a USB key to the iPBX's CPU card before accessing the menu **SYSTEM/Software maintenance/Compact flash migration**.

When this menu is selected, the software searches for the key and analyses its content. The content of the target directory on the key is first deleted, if it exists, otherwise a target directory is created if there is none.

If no key is detected, a message indicates that no key has been detected:

No USB key detected

On these conditions, connect a key then exit and return to the menu.

If a key is detected, the window is displayed in form of a single button, prompting you to back up the data to be migrated, on the key:

Start the backup on the USB key

Press this button to start backing up data on the USB key. A wait message is displayed during the backup operation.

The backup operation may take several minutes, depending especially on the number of voice messages and amount of TMA data available on the 1 GB compact flash card.

When the backup operation has been correctly completed, the following message appears:

Operation completed correctly

The USB key is automatically removed at the end of the backup operation.

You can then exit the menu and disconnect the key which now contains the migrated data.

In case of error, a dialogue box indicates that the backup has not been performed correctly. In this case, the data has not been fully stored on the key. The key is not removed automatically; it will be removed upon exiting the menu.

6.12.1.2.2Error messages

The following error messages may be displayed when data is being backed up on the USB key:

- « **Transfer error x** " means that an error occurred while data was being copied in phase x.
- « **System error, exit and retry** " means that no key is connected or that the maintenance software cannot execute the backup action.
- « **Forbidden function: version in test** " means that the software release is not valid.
- « **Other transfer in progress** " means that automatic TMA actions have not been completed.
- « **Cannot delete** " means that the USB key cannot be deleted before the backup operations start.
- « **Error of directory creation** " means that target directories cannot be created on the USB key.
- « **Not enough free disk space** " means that the space available on the key is not enough to contain all the data backed up.
- « **Impossible export** " means that the data BACKUP file cannot be created.

6.12.1.3 Replacing the compact flash card

Stop the iPBX by respecting the following two phases:

- On the CPU card, press briefly the "SHTD" (Shutdown) button. Wait for the green "SHTD" indicator light to be steady on, and for the other ones to go off.
- Power off the power modules (I/O push button on O).

Then

- Remover the CPU card from the cabinet.
- Remove the 1 GB compact flash card and replace it with a 2 GB flash card.
- The 2 GB compact flash card must be of the 2 GB **loaded not started** type so the country and spoken languages can be defined using Ctrl + I.
- Place back the CPU card.
- Start the iPBX in Ctrl + i mode (see next section).

If the software release is below the previous one, upgrade the software (see the document AMT/PTD/PBX/0058).

6.12.1.4 Restart with the new 2 GB card in TOTAL mode, using Ctrl + i.

Nota : *For more information about the procedure, see the document AMT/PTD/PBX0058, the section on changing from a 1 GB compact flash card to a 2 GB compact flash card, and activating a new system.*

During restart in TOTAL mode using CTRL + i, the following fields must be filled in (like in the previous configuration):

- **Network configuration** (IP address, subnet mask and gateway)
- **Country**
- **Languages** (out of the five languages proposed, the first two must be the same as in the previous configuration)

Important : *During migration to a 2 GB compact flash card, 5 languages are proposed whereas only 2 languages were proposed on the previous card. Therefore, the first two languages defined on the 1 GB compact flash card must be used on the new compact flash card.*

- **Licence**
- **Services** (FTP, TMA and DHCP).

After restart, confirm the software release and perform an upgrade if there is a difference between the new release installed on the 2 GB compact flash card and the release contained in the backup.

In case of upgrade, it will be necessary to validate this new software release.

Then restore the previous configuration in the 1 GB compact flash card (see previous

section).

6.12.1.5 Restoring data from the USB key

6.12.1.5.1Pre-requisites

The cabinet must be restarted correctly.

The software release is valid.

The USB key containing the backup is connected.

Important : *Before any restore operation, check the software release of the new card which must be at least equal to the previous one. If this is not the case, upgrade the software as described in Section 6.7 or 6.9.*

6.12.1.5.2Procedure

When it accesses the menu **SYSTEM/Software maintenance/Compact flash migration**, the iPBX detects that all the data to be restored is on the connected USB.

The following button is then displayed:

Restore the content of the USB key

This unique button is used to start data import in the iPBX.

Like for the previous case, a progress pop-up window is displayed during the restore operation. The restore operation takes place like the backup operation, in 6 phases. Here again, the operations may last several minutes. This restore operation takes place in the inactive space. After the restore operation, an automatic reset takes place to restart on the inactive release.

At the end of the restore operation and before reset is activated on the iPBX, if backup has been performed correctly, the following message is displayed:

Operation completed correctly

The restored data has been deleted from the key, and the key removed.

During the iPBX restart phase, the following message is displayed:

Restart in progress, please wait xx seconds.

In case of error, a dialogue box indicates that the restore operation has not been performed correctly. In this case, all the data remains on the USB key. The key is not removed automatically; it will be removed upon exiting the menu.

The restore operation lasts for about 6 minutes depending on the content to be restored and the original and target software releases.

Then validate the software release.

At the end of the procedure, if everything is correct, disconnect the USB key.

6.12.1.5.3Error messages

The following error messages may be displayed when data is being restored on the compact flash card:

- « **Transfer error x** " means that an error occurred while data was being copied in phase x.
- « **System error, exit and retry** " means that no key is connected or that the maintenance software cannot execute the restore action.
- « **Forbidden function: version in test** " means that the software release is not valid.
- « **Other transfer in progress** " means that automatic TMA actions have not been completed.
- « **Not enough free disk space** " means that the space available on the compact flash card is not enough to contain all the data to be restored.
- « **Software restitution failure** " means that data was not correctly restored by the maintenance software.

7 Maintenance

7.1 Security guidelines

Refer to Section 6.1.1.

7.2 Maintenance overview

7.2.1 Role and possibilities available

System maintenance includes operations used to maintain the system in a given state or restore it to a given state, or to restore the operating characteristics specified by the manufacturer.

This manual only concerns operations which can be performed on site using standard or user-friendly tools.

When maintenance exceeds the level defined above, the installer should contact the manufacturer's technical support to complete the maintenance if required.

Maintenance operations affect the iPBX availability. The equipment can have one of the following states:

- Full Mission Capable. All major services of the equipment are fully provided.
- Partial Mission Capable. One or more of the major services are not fully provided by the equipment.
- No Mission Capable. None of the major services is provided by the equipment.

iPBX maintenance operations are divided into preventive and corrective maintenance.

The system can identify the origin of an anomaly and locate it through a message displayed in the logbook in the user interface. See Aastra Management Portal operating manual (Document [1]).

In the case of remote operation, the operator on site intervenes to confirm the diagnosis made remotely, locate the faulty subassembly precisely, and return the iPBX to its normal operating state.

7.2.2 Maintenance resources

7.2.2.1 Role of Aastra Management Portal (AMP) in maintenance

Within the framework of maintenance, Aastra Management Portal is used to perform investigations or maintenance operations. See also Aastra Management Portal operating manual (Document [1]).

Hardware start-up tests

Hardware start-up tests take place automatically each time the iPBX is reset.

For Aastra XD, the behaviour then varies, depending on whether the system is simplex or duplex:

- In simplex mode, the status of the UCV-D card changes immediately to “Active”.
- In duplex mode, the status of the UCV-D card changes to “Active” if it is not out of service and if the other UCV-D card is not itself “Active”.

Nota : *Only a hardware problem prevents the active card from working correctly; otherwise an intentional removal of the active card triggers a switchover to the passive card, which takes over and becomes active.*

For any iPBX range, the hardware start-up test consists in completing the initialisation of the active CPU card, identifying the card resources, and identifying the hardware configuration (number of cabinets, equipment cards, presence of power supply modules and, for the AXD, presence of the IUCV-D card, presence of the passive UCV-D card, status of the active UCV-D card, etc.).

A series of tests are then performed on the main functions of the active CPU card. The entire hardware start-up tests are divided into phases then each phase into tests. The results of these tests are gradually d isplayed on the user console.

Hardware start-up tests are never blocking, except in the absence of the i-button; since this component is the key used to access the various optional software functions.

Error messages

The CPU card centralises and broadcasts all the statuses of each of the iPBX subassemblies and peripheral lines or networks associated with Aastra Management Portal.

The AMP summarises all the results and presents them in the form of error messages which appear in the operating software log.

The error messages are used to inform the operator when important events have been detected.

Nota : *The logbook displays additional information concerning service records, charge records, etc.*

7.2.3 Preventive maintenance

This is performed at predefined intervals or according to recommended criteria, in order to reduce the probability of failure or degradation of the system's operation.

It includes:

- Some preventive control operations
- Some preventive replacement operations

7.2.4 Corrective maintenance

This applies following failure of an item of equipment or subassembly.

A corrective maintenance operation is initialised:

- By the operator, following the display of an alarm (error message) on the AMP
- by the operator on site, after detection of an anomaly during a preventive maintenance operation or a fault signalled by an indicator,
- following an operating anomaly reported by the user.

The Table in section 7.3.1 lists the correspondence between an error message and the subassemblies involved.

Corrective maintenance comprises three types of procedure:

- fault localisation,
- testing,
- replacement.

7.2.5 Restarting

After replacing a sub-assembly on site, it is necessary to perform the following operations from the AMP:

- Check that the element no longer generates error messages.
- Return it to the same configuration as the old subassembly.

7.2.6 Returning subassemblies to be repaired

Faulty subassemblies are returned to the manufacturer's repair centre, in the exchange batch reusable packaging, accompanied with a fault sheet describing the anomaly observed.

7.2.7 List of interchangeable subassemblies, fuses, batteries, cables and securing kits

The lists of references for the interchangeable main cards and cabinets of the Aastra XS/ XL/XD range are given in the “product bulletin”.

The lists and references of the subassemblies (cards and power supply modules), cables, fuses, batteries, cabinets and mounting kits are given in Tableau 7.2 to Tableau 7.9 .

7.2.7.1 Interchangeable AXD iPBX subassemblies

INTERCHANGEABLE AXD IPBX SUBASSEMBLIES	ITEM CODE
Power supply module	
• ADS300XD	HR7559A
Ventilation module	
• VADS	AHR0122B
Blanking plates	
• Slot blanking plate	BHR0096A
Main cards	
• UCV-D	BHJ0032A
• RUCV-D (delivered with an external cable for connecting the main cabinet)	BHJ4856A
• IUCV-D (without i-button)	BHJ4855B
UCV-DS card daughter cards	
• 32-channel EIP	BHJ0022A
• 8-channel EIP	BHJ0022B
CLX cards	
• LD4* • LD4NX • ADPCM16V (LD4/LD4NX daughter card)	HJ4741A BHJ4699A HJ4399A
• LT2	BHJ4738A
• IPS	BHJ0004A
• PT2 • VOIP4E - 8 channels (PT2 daughter card) • VOIP4E - 16 channels (PT2 daughter card) • VOIP4E - 32 channels (PT2 daughter card)	BHJ4724C HJ4449C HJ4449B HJ4449A
• CS1 (+ cable)	BHT7853A
• CA1 (+ cable)	BHT7852A

INTERCHANGEABLE AXD IPBX SUBASSEMBLIES	ITEM CODE
• CP1	BHJ4721A
• MUM (+ cable)	BHT7847A
Equipment cards	
• LA16X	BHJ4431A
• LA16X-8	BHJ4431B
• LA8	HJ4714
• LN16X	BHJ4475A
• LN16X-8	BHJ4475B
• LN8	HJ4715
• LM8	BHJ4726A
• LH8	HJ4716
• LH16X	BHJ4830A
• LH16X-8	BHJ4830B
• LR4D (with DTOC) • LR4 (without DTOC) • FTXA (LR4 daughter card, 50 Hz charge detector) • FTXC (LR4 daughter card, 12/16 KHz charge detector)	BHJ4717F HJ4717A HJ2817A HJ2818A
• LI1 (+ cable)	BHT7854A
• BTX	BHJ4751A

TABLEAU 7.1 LIST OF INTERCHANGEABLE AXD IPBX SUBASSEMBLIES

7.2.7.2 Interchangeable AXS/AXL iPBX subassemblies

INTERCHANGEABLE AXL, AXS, AXS12 and AXS6 SUB-ASSEMBLIES	ITEM CODE
Power supply modules	
• ADS300X	BHR6953D
• ADS150X	BHR0119A
UCv card daughter cards	
• 32-channel EIP	BHJ0022A
• 8-channel EIP	BHJ0022B
• ADPCM16V (on EXT1-S and EXT1-S12 CPU card and LD4 daughter cad)	HJ4399A
CLX cards	
• LD4 • LD4N/LD4X	HJ4741 BHJ4699A
• LT2	BHJ4738A
• IPS	BAHJ0004A
• PT2 • VoIP4 - 8 channels • VoIP4 - 16 channels • VoIP4 - 32 channels	BHJ4724C HJ4449C HJ4449B HJ4449A
• CS1 (+ cable)	BHT7853A
• CA1 (+ cable)	BHT7852A
• CP1	BHJ4721A
• MUM (+ cable)	BHT7847A

TABLEAU 7.2 LIST OF INTERCHANGEABLE AXL, AXS, AXS12, AXS6 IPBX SUB-ASSEMBLIES (1/2)

INTERCHANGEABLE AXL, AXS, AXS12 and AXS6 iPBX subassemblies	ITEM CODE
Equipment cards	
• LA16X	BHJ4431A
• LA16X-8	BHJ4431B
• LA8*	HJ4714A
• LN16X	BHJ4475A
• LN16X-8	BHJ4475B
• LN8*	HJ4715A
• LM8	BHJ4726A
• LH8*	HJ4716A
• LH16X	BHJ4830A
• LH16X-8	BHJ4830B
• LR4D (with DTOC) • LR4 (without DTOC)* • FTXA (50 Hz charge detector) • FTXC (12/16 KHz charge detector)	BHJ4717F HJ4717A HJ2817A HJ2818A
• LI1 (+ cable)	BHT7854A
• BTX	BHJ4751A

* Card not provided

TABLEAU 7.3 LIST OF INTERCHANGEABLE AXL, AXS, AXS12 AND AXS6 IPBX SUB-ASSEMBLIES (2/2)

7.2.7.3 Interchangeable AXD/AXL/AXS/AXS12/AXS6 iPBX cables

INTERCHANGEABLE AXD/AXL/AXS/AXS12/AXS6 IPBX CABLE	ITEM CODE
• RJ45-RJ45 cable (length 5 m) for LA8, LN8, LM8, LA16 and LN16 cards	HG4765B
• RJ45-RJ45 cable (length 10 m) for LA8, LN8, LM8, LA16 and LN16 cards	HG4765C
• Standard FTP cable (120 ohms, cat 5) for LD4, LD4N, LD4X, LT2, PT2, and LR4 cards	HG4731
• AXS/AXS12/AXS6/AXD expansion cabinet cable	BHT8212A
• AXL expansion cabinet cable	BHG4784A
• Internal ribbon cable for AXS/AXS12/AXS6 expansion	BHR0129A
• FULL NULL MODEM -PPP- UCV-PC CABLE	BHG0024A

TABLEAU 7.4 LIST OF INTERCHANGEABLE AXD/AXL/AXS/AXS12/AXS6 IPBX CABLES

7.2.7.4 Interchangeable fuses

Only power supply modules have interchangeable fuses.

FUSE	ITEM CODE	AMPERAGE
ADS300XD power supply module fuses: • mains protection (accessible on front panel) • battery polarity inversion protection (F300 fuse accessible on the power supply card)	PK925F PK184M	3.15 A 6.3 A
• ADS300X power supply module fuses: - mains protection (accessible on front panel) - battery polarity inversion protection (F300 fuse accessible on the power supply card)	PK925F PK184M	3.15 A 6.3 A
• ADS150X power supply module mains protection fuses (accessible on rear panel)	PK925D	2.5 A

TABLEAU 7.5 LIST OF INTERCHANGEABLE FUSES

7.2.7.5 lithium batteries of UCV cards

INTERCHANGEABLE SUBASSEMBLY	ITEM CODE
• Lithium batteries CR2032 type of UCV-L and UCV-S cards	APK0008A
• Lithium batteries of UCV--D CR2450 type	APK0012A

TABLEAU 7.6 LIST OF LITHIUM BATTERIES

7.2.7.6 Optional interchangeable batteries

INTERCHANGEABLE SUBASSEMBLY	ITEM CODE
• AXD and AXL cabinet battery (wall/rack)	BHT7781A
• AXS, AXS12, AXS6 battery cabinet (wall/rack)	BHR7061A

TABLEAU 7.7 LIST OF OPTIONAL INTERCHANGEABLE BATTERIES

7.2.7.7 Interchangeable cabinets (AXD iPBX with ADS350XD)

INTERCHANGEABLE AXD IPBX CABINET	ITEM CODE
• AXD main cabinet comprising: 1 UCV-D card, 1 IUCV-D card with i-button, 1 ADS350XD power supply module	BRC0036AAFR
• AXD main cabinet comprising: 1 UCV-D card, 1 IUCV-D card with i-button, 2 ADS350XD power supply module	BRC0037AAFRr
• AXD main cabinet comprising: 2 cartes UCV-D, 1 IUCV-D card with i-button, 1 ADS350XD power supply module	BRC0038AAFR
• AXD expansion cabinet comprising: 1 RUCV-D card, 1 ADS350XD power supply module - delivered with an external cable for connecting the main cabinet	BRC0032AAAA
• AXD expansion cabinet comprising: 1 RUCV-D card, 2 ADS350XD power supply module - delivered with an external cable for connecting the main cabinet	BRC0033AAAA
• AXD expansion cabinet comprising: 2 RUCV-D card, 1 ADS350XD power supply module - delivered with an external cable for connecting the main cabinet	BRC0034AAAA

TABLEAU 7.8 LIST OF INTERCHANGEABLE CABINETS (AXD IPBX)

7.2.7.8 Interchangeable cabinets (AXL iPBX with ADS350 XL)

INTERCHANGEABLE AXL IPBX CABINET	ITEM CODE
• AXL main cabinet comprising: 1 UCV-L card with i-button, 1 ADS350XL power supply module	BRC0024A
• AXL expansion cabinet comprising: 1 RUCV-L card, 1 ADS350XL power supply module - delivered with an external cable for connecting the main cabinet	BRC0030AA

7.2.7.9 Mounting kits

MOUNTING KIT	ITEM CODE
• AXD mounting kit	BHT7716E
• AXL mounting kit	BHT7716A
• AXS, AXS12, AXS6 mounting kit	BHT7716D

TABLEAU 7.9 LIST OF MOUNTING KITS

7.3 Alarm messages and codes

Error messages sent by the Maintenance and Startup system are displayed by the Operating system in the logbook. They advise the operator that the software has detected one of the following events:

- an anomaly detected in the configuration a fault report message is posted in the log. A fault report can be:
  - a software error detected by a software module
  - a software errors detected by the operating system
  - a software error detected in a memory directory file
  - a hardware error detected on a peripheral terminal or card
- fail-safe action initiated and executed by maintenance software. A defence action report message is posted in the logbook.

7.3.1 Description of errors

TBC

Error number	Description

7.3.2 Operating system errors

Value (hex)	Error description

7.3.3 Programming error codes

7.3.4 Additional error codes

7.4 Corrective maintenance

7.4.1 Description

7.4.1.1 Structure of exchange records

The exchange records include (see Figure 7.1):

- a header containing the number and title of the record,
- a set of headings giving logistic information relating to the task:
  - the equipment availability (see section 7.2.1),
  - the number of operators,
  - the duration of the task,
  - the means required for performing the task,
  - the ingredients and consumables used,
- a main body, describing the operations to perform, broken down into 4 sections:
  - Removal:

    This section describes all the operations required to remove the element. It is displayed in the form of a table with two columns:
    - the first column lists only the main actions to be performed,
    - the second column provides the detailed removal procedure to be carried out, plus any comments.
  - Reassembly:

    This section describes all the operations required to reassemble the element. It is displayed in the form of a table with two columns:
    - the first column lists only the main actions to be performed,
    - the second column provides the detailed procedure to be carried out to put back the subassembly, plus any comments.

The description of exchange operations is based on figures providing a physical description of the subassembly. If required, an additional removal/reassembly figure shows the fittings and connections of the subassembly.

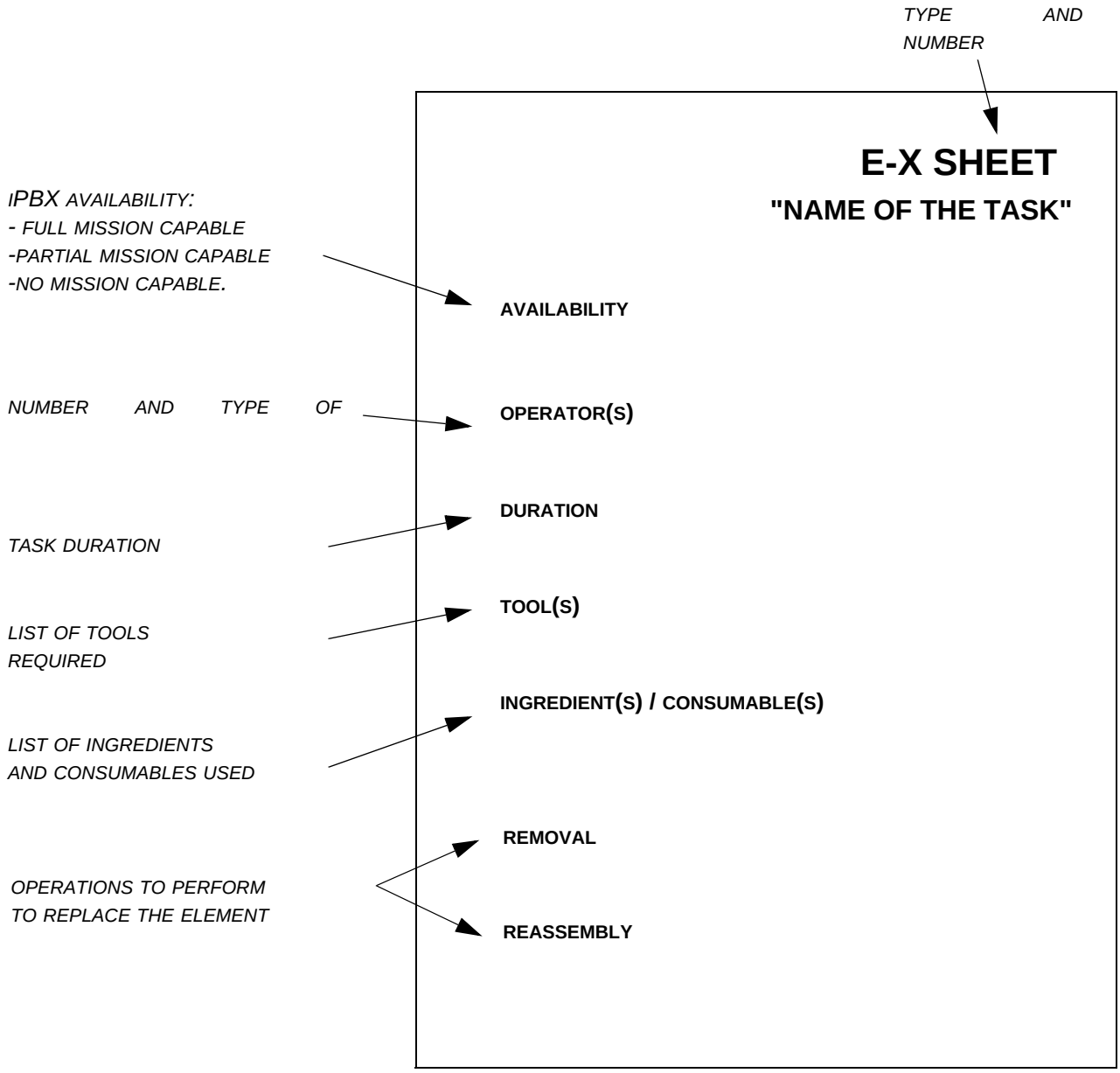


Figure 7.1 *OVERVIEW OF AN EXCHANGE SHEET (E SHEET)*

7.4.1.2 Conventions used in the sheets

- The means (standard tools, etc.) are listed at the beginning of the sheet, but are not detailed for each operation in the procedure.
- The duration indicated is the approximate time required to perform the procedure; when the latter refers to another exchange sheet, the times must be added together to obtain the total time required.

  However, the duration does not include the time required for preparing the procedure (tools, etc.).
- Cable references are not always given in the sheets: to make the connections of the subassemblies to be installed the operator must refer to the labels attached to the cables.
- The microswitch configurations of the subassemblies are described in Chapter 4.

7.4.1.3 Guidelines

- Apply all safety instructions (see Section 6.1.1).
- Keep the exchange procedure time to a minimum, in order to minimise operational (availability) or technical (lack of ventilation, etc.) consequences.
- When refitting a subassembly, check that it is inserted properly, and that the cables are connected securely.
- Before performing any corrective maintenance operation on a cabinet, it is advisable to back up the client configuration (see Section 1.3, Document [4]).

7.4.2 List of E sheets

SHEET NO.	DESCRIPTION OF THE OPERATION
SHEET E-1	Replacing an ADS300XD power supply module
SHEET E-2	Replacing an AXL power supply module
SHEET E-3	Replacing an AXS power supply module
SHEET E-4	Replacing an AXS12/AXS6 power supply module
SHEET E-5	Replacing a VADS ventilation module
SHEET E-6	Replacing fuses in the power supply module (AXD iPBX)
SHEET E-7	Replacing fuses in the power supply module (AXL and AXS iPBX)
SHEET E-8	Replacing a UCV-D CPU card
SHEET E-9	Replacing a RUCV-D card
SHEET E-10	Replacing an IUCV-D card
SHEET E-11	Standard replacement of an AXD main cabinet
SHEET E-12	Standard replacement of an AXL main cabinet
SHEET E-13	Standard replacement of an AXS main cabinet
SHEET E-14	Standard replacement of an AXS12 main cabinet
SHEET E-15	Replacing an expansion cabinet (AXD iPBX)
SHEET E-16	Replacing an expansion cabinet (iPBX AXL, AXS, AXS12)

TABLEAU 7.10 LIST OF E SHEETS

SHEET E-1REPLACING AN ADS300XD POWER SUPPLY MODULE

AVAILABILITY

- No mission capable if power supply module is not duplicated
- Full mission capable if power supply module is duplicated

OPERATORS (s)

- 1 operator on site

DURATION

- 1 minute 30 seconds
- 1 standard tool case

INGRÉDIENT(S)/CONSOMMABLE(S)

- N/A.

PROCEDURE

See Figure 4.3 for an overview of the power supply module.

Table 1:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Alert the operator.	• In the case of remote operation, contact the remote operator before starting any operation.
• Check the functional technical state of the new power supply module.	• Check that the functional technical state of the new power supply module is compatible with the old one.
• Power off the power supply module to be removed.	• Refer to Section 6.4, Stopping the system (AXD, AXL, AXS, AXS12 and AXS6)Error! No bookmark name given. **Avertissement :** *For a duplex configuration, when a power supply module is out of service, the operator has approximately 90 seconds to replace and power on again the power supply module. After 90 seconds, the second power supply module is automatically powered off.* • In a simplex configuration, if it is an iPBX with multiple cabinets, power off the power supply module of the main cabinet then those of the expansion cabinets.
• Disconnect the mains cable.	• Disconnect the mains cable on the front panel of the power supply module.
• Pull out the power supply module.	• Unscrew the two securing screws on the front panel of the power supply module. • Pull out the power supply module using its handles, and remove it.
• Fit the new power supply module.	• Check that the new power supply module is powered off (“I/O” switch set to “O”). • Insert the power supply module in its slot and push it fully home. • Secure the power supply module onto the iPBX structure using its two captive screws.
• Connect the mains cable.	• Connect the mains cable on the front panel of the power supply module.
• Power on the power supply module.	• "I/O" switch on "I". • For a simplex configuration, if it is an iPBX with several cabinets: - First power on the power supply module in the expansion cabinets. - then power on the power supply module in the main cabinet.
• Check the status of the indicators on the front panel.	Refer to Section 4, Description des sous-ensemblesError! No bookmark name given.

SHEET E-2REPLACING AN AXL POWER SUPPLY MODULE

AVAILABILITY

- No mission capable
- 1 operator on site

DURATION

- 15 minutes
- 1 standard tool case

INGRÉDIENT(S)/CONSOMMABLE(S)

- N/A.

PROCEDURE

See Figure 4.5 for an overview of the power supply module.

Table 2:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Alert the operator.	• In the case of remote operation, contact the remote operator before starting any operation.
• Power off the power supply module to be removed.	• Refer to Section 6.4, Stopping the system (AXD, AXL, AXS, AXS12 and AXS6)Error! No bookmark name given. • If it is the power supply module of a main cabinet in an iPBX with multiple cabinets, also power off the power supply module of the expansion cabinets ("I/O" switch on "O").
• Disconnect the cables.	• Disconnect the mains cable, and if required the backup battery connected on the front panel of the power supply module.
• Pull out the power supply module.	• Unscrew the two securing screws on the front panel of the power supply module. • Pull out the power supply module using its handles, and remove it.
• Check the functional technical state of the new power supply module.	• Check that the functional technical state of the new power supply module is compatible with the old one.
• Fit the new power supply module.	• Check that the new power supply module is powered off (“I/O” switch set to “O”). • Insert the power supply module in its slot and push it fully home. • Secure the power supply module onto the iPBX structure using its two captive screws.
• Connect the cables.	• Connect the mains cable, and if required the backup battery connected on the front panel of the power supply module.
• Power on the power supply module.	• "I/O" switch on "I". • If it is the power supply module of the main cabinet in an iPBX with multiple cabinets: - first power on the power supply modules in the expansion cabinets, - then power on the power supply module in the main cabinet.
• Check the status of the indicators on the front panel.	Refer to Section 4, Description des sous-ensemblesError! No bookmark name given.

SHEET E-3REPLACING AN AXS POWER SUPPLY MODULE

AVAILABILITY

- No mission capable
- 1 operator on site

DURATION

- 20 minutes
- 1 standard tool case
- 1 Facom AZXR 15*75 Torx screwdriver for M4 screw (cover)

INGRÉDIENT(S)/CONSOMMABLE(S)

- N/A.

Table 3:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Alert the operator.	• In the case of remote operation, contact the remote operator before starting any operation.
• Power off the power supply module to be removed.	• Refer to Section 6.4, Stopping the system (AXD, AXL, AXS, AXS12 and AXS6)Error! No bookmark name given. • If it is the power supply module of a main cabinet in an iPBX with multiple cabinets, also power off the power supply module of the expansion cabinets ("I/O" switch on "O").
• Disconnect the external cables.	• **Disconnect the mains cable**, and if required the backup battery connector on the rear panel of the cabinet.
• Remove the cabinet cover.	• Unscrew the securing screws at the back of the cabinet. • Slide the iPBX cover to the back.
• Remove the expansion cards.	• Use the 1/4 turn locks to remove the card from its slot (see Figure 4.1). • Remove the guide rails.
• If required, disconnect the expansion ribbon cable.	• If the iPBX has two cabinets, disconnect the expansion ribbon cable linking the back plane to the expansion cable connector.
• Remove the backplane	• Disconnect the backplane from the main card.
• Disconnect the power supply ribbon cable from the CPU card.	

Table 4:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Unscrew the two securing screws on the mains unit.	
• Disconnect the fan cable from the power supply.	
• Pull out the power supply module.	• Unscrew the power supply module and pull it out slowly.
• Check the functional technical state of the new power supply module.	• Check that the functional technical state of the new power supply module is compatible with the old one.
• Fit the new power supply module.	• Insert the power supply module in its slot and secure it with its screws.
• Connect the fan cable to the power supply.	
• Screw on the mains unit (at the back of the cabinet).	
• Connect the power supply ribbon cable to the CPU card.	
• Mount the expansion ribbon cable holder (AXS).	•
• Refit the backplane.	• Connect the backplane to the main card.
• If required, connect the expansion ribbon cable.	• If the iPBX has two cabinets, connect the expansion ribbon cable linking the back plane to the expansion cable connector.

Table 5:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Reinstall the expansion cards.	• Place the guide rails. • Insert the card in its slot and lock it in place using the 1/4 turn locks (see Section 4.1).

Table 5:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Close the cabinet.	• Secure the cover, - Fit the cover slightly to the rear of the cabinet and push it forward. - Tighten the securing screws at the back of the cabinet. - If necessary, secure the screws on the sides with brackets.
• Connect the external cables.	• Connect the mains cable, and if required the backup battery connector on the rear panel of the cabinet.
• Power on the power supply module.	• "I/O" switch on "I". • If it is the power supply module of the main cabinet in an iPBX with multiple cabinets: - first power on the power supply modules in the expansion cabinets, - then power on the power supply module in the main cabinet.
• Check the status of the indicators on the front panel.	Refer to Section 4, Description des sous-ensemblesError! No bookmark name given.

SHEET E-4REPLACING AN AXS12/AXS6 POWER SUPPLY MODULE

AVAILABILITY

- No mission capable
- 1 operator on site

DURATION

- 20 minutes
- 1 standard tool case
- 1Facom AZXR 15*75 Torx screwdriver for M4 screw (cover)

INGRÉDIENT(S)/CONSOMMABLE(S)

- N/A.

See Figure 3.16 for a view of the AXS iPBX.

Table 6:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Alert the operator.	• In the case of remote operation, contact the remote operator before starting any operation.
• Power off the power supply module to be removed.	• Refer to Section 6.4, Stopping the system (AXD, AXL, AXS, AXS12 and AXS6)Error! No bookmark name given.
• Disconnect the external cables.	• Disconnect the mains cable, and if required the backup battery connected on the rear panel of the cabinet.
• Remove the cabinet cover.	• Unscrew the two securing screws at the back of the cabinet, • Slide the iPBX cover to the back.
• Remove the expansion cards.	• Use the 1/4 turn locks to remove the card from its slot (see Figure 4.1). • Remove the guide rails.
• Remove the backplane	• Disconnect the backplane from the main card.
• Disconnect the power supply cable from the CPU card.	
• Unscrew the two securing screws on the mains unit.	
• Disconnect the fan cable from the power supply.	
• Pull out the power supply module.	• Unscrew the power supply module and pull it out slowly.

Table 7:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Check the functional technical state of the new power supply module.	• Check that the functional technical state of the new power supply module is compatible with the old one.
• Fit the new power supply module.	• Insert the power supply module in its slot and secure it with its screws.
• Connect the fan cable to the power supply.	
• Screw on the mains unit (at the back of the cabinet).	
• Connect the power supply cable to the CPU card.	
• Refit the backplane.	• Connect the backplane to the main card.
• Reinstall the expansion cards.	• Place the guide rails. • Insert the card in its slot and lock it in place using the 1/4 turn locks (see Figure 4.1).
• Close the cabinet.	• Secure the cover, - Fit the cover slightly to the rear of the cabinet and push it forward. - Tighten the two securing screws at the back of the cabinet.
• Connect the external cables.	• Connect the mains cable, and if required the backup battery connector on the rear panel of the cabinet.
• Power on the power supply module.	• "I/O" switch on "I".
• Check the status of the indicators on the front panel.	Refer to Section 4, Description des sous-ensemblesError! No bookmark name given.

SHEET E-5REPLACING A VADS VENTILATION MODULE

AVAILABILITY

- Full mission capable

OPERATORS (s)

- 1 operator on site

DURATION

- 1 minute 30 seconds
- 1 standard tool case

INGRÉDIENT(S)/CONSOMMABLE(S)

- N/A.

See Figure 4.3 for an overview of the power supply module.

Table 8:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Alert the operator.	• In the case of remote operation, contact the remote operator before starting any operation.
• Check the functional technical state of the new VADS ventilation module.	• Check that the functional technical state of the new ventilation module is compatible with the old one.
• Remove the ventilation module.	**Avertissement :** *The operator has about 90 seconds to make the replacement. After 90 seconds, the power supply module is automatically powered off.* • Unscrew the two securing screws on the front panel of the ventilation module. • Remove the ventilation module using its handles.
• Fit the new VADS ventilation module.	• Insert the ventilation module in its slot and push it fully home. • Secure the ventilation module onto the iPBX structure using its two captive screws.

SHEET E-6 REPLACING FUSES IN THE POWER SUPPLY MODULE (AXD IPBX)

AVAILABILITY

- No mission capable if power supply module is not duplicated
- Full mission capable if power supply module is duplicated

OPERATORS (s)

- 1 operator on site

DURATION

- 1 minute 30 seconds
- 1 multimeter

INGRÉDIENT(S)/CONSOMMABLE(S)

- N/A

Table 9:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Alert the operator.	• In the case of remote operation, contact the remote operator before starting any operation.
• Power off the power supply module.	• Refer to Section 6.4, Stopping the system (AXD, AXL, AXS, AXS12 and AXS6)Error! No bookmark name given. **Avertissement :** *For a duplex configuration, when a power supply module is out of service, the operator has approximately 90 seconds to replace and power on again the power supply module. After 90 seconds, the second power supply module is automatically powered off.* • "I/O" switch to "O". • In a simplex configuration, if it is an iPBX with multiple cabinets, power off the power supply module of the main cabinet then those of the expansion cabinets.
• Disconnect the mains cable.	• Disconnect the mains cable on the front panel of the power supply module.

Table 9:

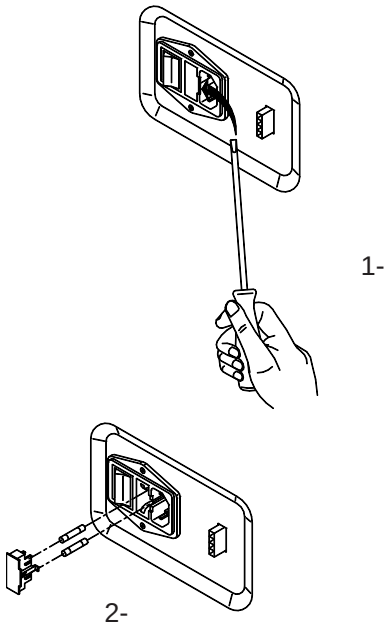
OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Remove the fuse holder located between the “I/O” switch and the connector.	• Utiliser un outil (par exemple un petit tournevis à tête plate) comme levier, comme l’illustre la figure suivante :  1- 2-
• Unclip the fuses from the fuse holder.	
• Check the continuity of the fuses using the multimeter (W position).	

Table 10:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Check the compliance of the new fuses.	See Tableau 7.5 .
• Insert the new fuses in the fuse holder.	
• Refit the fuse holder in its slot, on the front panel of the power supply module.	
• Connect the mains cable	• Connect the mains cable on the front panel of the power supply module.

Table 10:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Power on the power supply module.	• "I/O" switch to 'I". • For a simplex configuration, if it is an iPBX with several cabinets: - First power on the power supply module in the expansion cabinets. - then power on the power supply module in the main cabinet.
• Check the status of the indicators on the front panel.	Refer to Section 4, Description des sous-ensemblesError! No bookmark name given.

SHEET E-7REPLACING FUSES IN THE POWER SUPPLY MODULE (AXL AND AXS IPBX)

AVAILABILITY

- No mission capable
- 1 operator on site

DURATION

- 5 minutes
- 1 multimeter

INGRÉDIENT(S)/CONSOMMABLE(S)

- N/A

Table 11:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Alert the operator.	• In the case of remote operation, contact the remote operator before starting any operation.
• Power off the cabinet's power supply module.	• Refer to Section 6.4, Stopping the system (AXD, AXL, AXS, AXS12 and AXS6)Error! No bookmark name given. • If it is an iPBX with multiple cabinets, power off the power supply module of the main cabinet then those of the expansion cabinets ("I/O" switch to "O").
• Disconnect the cables.	• Disconnect the mains cable, and if appropriate the backup battery connector: - on the front panel of the power supply module (AXL) - at the back of the cabinet (AXS and AXS12).

Table 11:

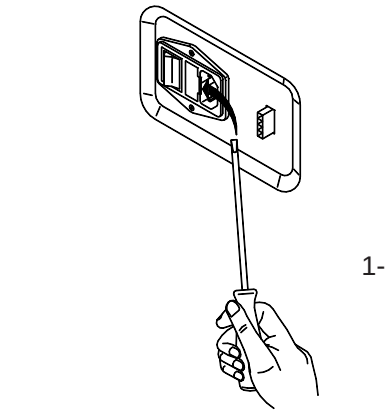
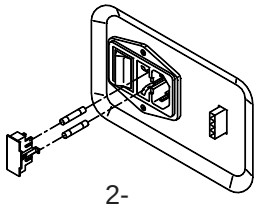
OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Remove the fuse holder located between the “I/O” switch and the connector.	• Utiliser un outil (par exemple un petit tournevis à tête plate) comme levier, comme l’illustre la figure suivante :  1-  2-
• Unclip the fuses from the fuse holder.	
• Check the continuity of the fuses using the multimeter (W position).	

Table 12:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Check the compliance of the new fuses.	See Tableau 7.5 .
• Insert the new fuses in the fuse holder.	
• Refit the fuse holder in its slot, on the front panel of the power supply module.	
• Connect the cables.	• Disconnect the mains cable, and if appropriate the backup battery connector: - on the front panel of the power supply module (AXL) - at the back of the cabinet (AXS and AXS12).
• Power on the iPBX.	• If it is an iPBX with multiple cabinets, first power on the power supply module for the expansion cabinets ("I/O" switch on "I"). • Power on the power supply module of the main cabinet (“I/O” switch on “I”).
• Check the status of the indicators on the front panel.	Refer to Section 4, Description des sous-ensemblesError! No bookmark name given.

SHEET E-8REPLACING A UCV-D CPU CARD

AVAILABILITY

- Disabled if UCV-D is not duplicated
- Full mission capable if UCV-D card is duplicated

OPERATORS (s)

- 1 operator on site

DURATION

- 2 minutes

INGRÉDIENT(S)/CONSOMMABLE(S)

- N/A

Replacing a non-duplicated UCV-D card

Table 13:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Back up the customer configuration.	• Precautionary operation to be carried out if there is no existing copy (which is the case when previous installation operations have been carried out and the procedures followed). • Refer to [1] • In the case of remote operation, contact the remote operator before starting any operation.
• Power off the iPBX.	• Refer to Section 6.4, Stopping the system (AXD, AXL, AXS, AXS12 and AXS6).Error! No bookmark name given. For a system with several cabinets, first power off the main cabinet, then the expansion cabinet(s). **Nota :** *(1) All the system's services are interrupted when a non-duplicated UCV-D card is being replaced.* *(2) It is advisable to stop the IPS card before powering off the iPBX.*
• Disconnect the cables.	• Disconnect the external cables from the card and mark the cables for refitting.
• Pull out the card from its slot.	• Use the 1/4 turn locks to remove the card from its slot (see Figure 4.1).
• Check that the functional technical state of the new card is compatible with the old one.	

Table 13:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Check the configuration of the card.	• For a card with micro-switches, check that these latter are configured as they were on the old card, unless the configuration has been changed (in which case, see Section 4.3). • As the card may have daughter cards, check that it is fitted in the same way as the previous one, unless its configuration has been modified due to a change in its capacity (in which case, see Section 4.3 and/or the product “Data sheet”).
• Insert the new card into its slot.	• Slide the card along the card guides until it clicks into place. • Lock the card in place using the 1/4 turn locks (see Figure 4.1).
• Perform the wiring exactly as in the old cabinet.	
• Power on the iPBX.	• For an iPBX with several cabinets, first power on the expansion cabinet(s) by setting the “I/O” switch of the power supply module to position “I”. • Set the “I/O” switch on the main cabinet power supply module to position “I”.
• Perform a software check.	• Check the software release of the card on the AMP (see document [1]). • Contact your distributor if the details do not coincide.
• Check the status of the indicators on the front panel.	Refer to Section 4, Description des sous-ensemblesError! No bookmark name given.
• Back up the customer configuration.	

Replacing a duplicated UCV-D card

Table 14:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Back up the customer configuration.	• Precautionary operation to be carried out if there is no existing copy (which is the case when previous installation operations have been carried out and the procedures followed). • Refer to [1] • In the case of remote operation, contact the remote operator before starting any operation.
• Disconnect the cables on the UCV-D card to be removed.	• Disconnect the external cables from the card and mark the cables for refitting.
• Reconnect the cables to another UCV-D card.	• Perform the wiring exactly as for the card to be removed. **Nota :** *A hardware anomaly detected on the active UCV-D card triggers an automatic switchover of the UCV-D card, which becomes passive. The second UCV-D card takes over and becomes active.* *After a switchover the duration of which depends on the configuration (15 s. to 1 min.), the passive CPU card takes over and becomes active in the following three cases:* *- if the active card is removed,* *- if the active card remains idle for 2 minutes,* *- if a hardware failure is detected on the active UCV-D card (in this case, a hardware fault detection is performed. The unavailability time on the cabinet can, therefore, be up to 3 minutes).* **Nota :** *If the iPBX has an expansion cabinet, the active RUCV-D card is the one connected to the active UCV-D card. In case of switchover to the UCV-D card, there is also a switchover to RUCV-D. If for example* *UCV-D(A) becomes faulty, UCV-D(B) takes over and becomes active. On the expansion cabinet side, it is the RUCV(B) that is active (and RUCV(A) passive).*
• Pull out the faulty card from its slot.	• Use the 1/4 turn locks to remove the card from its slot (see Figure 4.1). **Nota :** *The UCV-D card can be removed from an operational AXD iPBX.*
• Check that the functional technical state of the new card is compatible with the old one.	

Table 14:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Check the configuration of the card.	• For a card with micro-switches, check that these latter are configured as they were on the old card, unless the configuration has been changed (in which case, see Section 4.3). • As the card may have daughter cards, check that it is fitted in the same way as the previous one, unless its configuration has been modified due to a change in its capacity (in which case, see Section 4.3 and/or the product “Data sheet”).
• Insert the new card into its slot.	• Slide the card along the card guides until it clicks into place. • Lock the card in place using the 1/4 turn locks (see Figure 4.1). **Nota :** *The UCV-D card can be hot-plugged in an operational AXD iPBX.*
• Activate the passive UCV-D card from the AMP.	See Section 1.3 Document [1]. **Nota :** *This new card is now the passive card and must be activated so that the system can take it into account, and to fully synchronise as soon as possible the active card and the new passive card (software, data, announcements, IVR, etc.). This passive card will only become active during the next switchover.*
• Perform a software check.	• Check the software release of the card on the AMP (see document [1]). • Contact your distributor if the details do not coincide.
• Check the UCV-D card indicators.	Refer to Section 4, Description des sous-ensemblesError! No bookmark name given.
• Back up the customer configuration.	.

SHEET E-9REPLACING A RUCV-D CARD

AVAILABILITY

- Partial mission capable if the RUCV-D card is not duplicated
- Full mission capable if the RUCV-D card is duplicated

OPERATORS (s)

- 1 operator on site

DURATION

- 2 minutes

INGRÉDIENT(S)/CONSOMMABLE(S)

- N/A

Replacing a non-duplicated RUCV-D CPU card

Table 15:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Back up the customer configuration.	• Precautionary operation to be carried out if there is no existing copy (which is the case when previous installation operations have been carried out and the procedures followed). • Refer to [1] • In the case of remote operation, contact the remote operator before starting any operation.
• Pull out the faulty card from its slot.	• Use the 1/4 turn locks to remove the card from its slot (see Figure 4.1). **Nota :** *The RUCV-D card can be removed from an operational AXD iPBX.* **Nota :** *When the active RUCV-D card fails, there is loss of communication with the sets and lines associated with the cards installed in the expansion cabinet.*
• Check that the functional technical state of the new card is compatible with the old one.	.
• Check the configuration of the card.	• For a card with micro-switches, check that these latter are configured as they were on the old card, unless the configuration has been changed (in which case, see Section 4.5). • As the card may have daughter cards, check that it is fitted in the same way as the previous one, unless its configuration has been modified due to a change in its capacity (in which case, see Section 4.5 and/or the product “Data sheet”).
• Insert the new card into its slot.	• Slide the card along the card guides until it clicks into place. • Lock the card in place using the 1/4 turn locks (see Figure 4.1). **Nota :** *The RUCV-D card can be hot-plugged in an operational AXD iPBX.*
• Perform a software check.	• Check the software release of the card on the AMP (see document [1]). • Contact your distributor if the details do not coincide.
• Check the RUCV-D card indicators.	For a card fitted with indicators, check that the yellow and/or green indicators on the front panel are on, and that no red indicator is on (refer to Section4.5 to check that the operating conditions indicated by the LEDs are correct).
• Activate the RUCV-D card from the AMP.	Refer to the document [1].
• Back up the customer configuration.	

Replacing a duplicated RUCV-D CPU card

Table 16:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Back up the customer configuration.	• Precautionary operation to be carried out if there is no existing copy (which is the case when previous installation operations have been carried out and the procedures followed). • Refer to [1] • In the case of remote operation, contact the remote operator before starting any operation.
• Pull out the faulty card from its slot.	• Use the 1/4 turn locks to remove the card from its slot (see Figure 4.1). **Nota :** *The RUCV-D card can be removed from an operational AXD iPBX.* **Nota :** *A failure of the active RUCV-D card triggers a switchover of the active UCV-D/RUCV-D to the passive UCV-D/RUCV-D card.* *After a switchover the duration of which depends on the configuration (15 s. to 1 min.), the passive CPU card takes over and becomes active in the following three cases:* *- if the active card is removed,* *- if the active card remains idle for 2 minutes,* *- if a hardware failure is detected on the active RUCV-D card (in this case, a hardware fault detection is performed. The unavailability time on the cabinet can, therefore, be up to 3 minutes).* **Nota :** *Of course, this system performs this switchover only if it does not encounter serious anomalies on the second UCV-D card.*
• Check that the functional technical state of the new card is compatible with the old one.	
• Check the configuration of the card.	• For a card with micro-switches, check that these latter are configured as they were on the old card, unless the configuration has been changed (in which case, see Section 4.5). • As the card may have daughter cards, check that it is fitted in the same way as the previous one, unless its configuration has been modified due to a change in its capacity (in which case, see Section 4.5 and/or the product “Data sheet”).
• Insert the new card into its slot.	• Slide the card along the card guides until it clicks into place. • Lock the card in place using the 1/4 turn locks (seeFigure 4.1). **Nota :** *The RUCV-D card can be hot-plugged in an operational AXD iPBX.*

Table 16:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Activate the passive RUCV-D card from the AMP.	Refer to the document [1]. **Nota :** *This new card is now the passive card (since it is connected to the passive UCV-D card). It must be activated in order to be taken into account by the system.*
• Perform a software check.	• Check the software release of the card on the AMP (see document [1]). • Contact your distributor if the details do not coincide.
• Check the RUCV-D card indicators.	For a card fitted with indicators, check that the yellow and/or green indicators on the front panel are on, and that no red indicator is on (refer to Section4.5 to check that the operating conditions indicated by the LEDs are correct).
• Back up the customer configuration.	

SHEET E-10REPLACING AN IUCV-D CARD

AVAILABILITY

- Partial mission capable

OPERATORS (s)

- 1 operator on site

DURATION

- 2 minutes

INGRÉDIENT(S)/CONSOMMABLE(S)

- N/A

Table 17:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Back up the customer configuration.	• Precautionary operation to be carried out if there is no existing copy (which is the case when previous installation operations have been carried out and the procedures followed). • Refer to [1] • In the case of remote operation, contact the remote operator before starting any operation.
• Disable the IUCV-D card from the AMP.	Refer to the document AMP Operating manual.
• Disconnect the cables.	• Disconnect the external cables from the card and mark the cables for refitting.
• Pull out the card from its slot.	• Use the 1/4 turn locks to remove the card from its slot (see Figure 4.1. **Nota :** *The IUCV-D card can be removed from an operational AXD iPBX.* **Nota :** *The i-button becomes inaccessible when the IUCV-D card is removed. The locking software checks every hour whether the i-button module is available. If the software makes this check while the IUCV-D is being replaced, some functions will be locked dynamically (the directory, for instance). Simple call (also for IP sets) remain operational.*
• Recover the i-button module.	• Recover, on the IUCV-D card, the i-button module containing the system's identifier.

Table 17:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Check that the functional technical state of the new card is compatible with the old one.	
• Install the i-button module.	• Install the i-button module of the old IUCV-D card on the new card.
• Insert the new card into its slot.	• Slide the card along the card guides until it clicks into place. • Lock the card in place using the 1/4 turn locks (see Figure 4.1). **Nota :** *The IUCV-D card can be hot-plugged in an operational AXD iPBX.*
• Perform the wiring exactly as in the old cabinet.	
• Perform a software check.	• Check the software release of the card on the AMP (see document [1]). • Contact your distributor if the details do not coincide.
• Check the card indicators.	For a card fitted with indicators, check that the yellow and/or green indicators on the front panel are on, and that no red indicator is on (refer to Section 4.4 to check that the operating conditions indicated by the LEDs are correct).
• Activate the IUCV-D card from the AMP.	Refer to the document Aastra Management Portal AXD-AXL-AXS-AXS12-A5000 Server – Operating Manual.
• For a duplex configuration, reactivate the passive UCV-D card from the AMP.	Refer to the document Aastra Management Portal AXD-AXL-AXS-AXS12-A5000 Server – Operating Manual. **Nota :** *In a duplex configuration, the two UCV-D cards (active and passive) communicate through the IUCV-D card. When the IUCV-D is removed, the duplex function stops working. The status of the passive UCV-D card then changes to "alarm" or "faulty". It is, therefore, necessary to reactivate the passive UCV-D card.*
• Back up the customer configuration.	

SHEET E-11 STANDARD REPLACEMENT OF AN AXD MAIN CABINET

AVAILABILITY

- No mission capable

OPERATORS (s)

- 1 operator on site

DURATION

- 20 minutes

INGRÉDIENT(S)/CONSOMMABLE(S)

- N/A

Table 18:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Back up the customer configuration.	• Precautionary operation to be carried out if there is no existing copy (which is the case when previous installation operations have been carried out and the procedures followed). • Refer to [1] • In the case of remote operation, contact the remote operator before starting any operation.
• Power off the iPBX.	• Refer to Section 6.4, Stopping the system (AXD, AXL, AXS, AXS12 and AXS6)Error! No bookmark name given. • For a system with several cabinets, first power off the main cabinet, then the expansion cabinet. **Nota :** *It is advisable to stop the IPS card before powering off the iPBX.*
• Disconnect the cables.	• **Disconnect the mains cable.** • Disconnect the cables connected to the front panel of the UCV-D, IUCV-D cards and those on the cabinet's expansion cards and mark the cables for refitting. • For a system with several cabinets, disconnect the cable located at the rear of the cabinet.
• Remove the old cabinet.	
• Remove the IUCV-D card.	• Pull out the IUCV-D card from its slot using the 1/4 turn locks (see Figure 4.1).
• Retrieve the module. i-Button.	• Recover, on the IUCV-D card, the i-button module containing the system's identifier.
• Remove the new IUCV-D card.	• Pull out the new IUCV-D card from its slot using the 1/4 turn locks (seeFigure 4.1).

Table 18:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Install the module. i-Button.	• Install the i-button module of the old IUCV-D card on the new card.
• Remove and recover the i-button identification number.	• Remove and recover, at the back of the cabinet, the label with the i-Button's identifier number (the i-Button's identifier label only, not the product identification label). • Stick the i-Button's identification label on the back of the new cabinet.
• Recover the expansion cards from the old cabinet.	
• Install the cards in the new cabinet.	Expansion cards and new UCV-D card(s). **Nota :** *Since UCV-D card(s) may be fitted with daughter cards, check that the new card(s) is/are equipped exactly like the previous one(s), except in case of modification its/their configuration(s) owing to a change in its/their capacity(capacities) (in this case, see Section 4.3 or the product "Data sheet").*
• Fit the new cabinet.	
• Install the cables exactly like in the old cabinet.	• On the front panel of the expansion cards • On the front panel of the IUCV-D card • On the front panel of the UCV-D card(s) • If the iPBX has an expansion cabinet, at the back of the cabinet • On the front panel of the power supply module.
• Connect the mains cable	• Connect one end of the mains cable to the power supply module of the cabinet and the other end to a grounded mains power point. **Attention :** *The iPBX must be powered off when installing the mains cable.* *Never connect network lines while the mains power cable is unplugged.*
• Power on the iPBX.	• Before powering on the cabinet, check that all the following tasks have been performed: - all line connections are installed, - all equipment has been connected to a grounded power point. • Power on the iPBX: - for an iPBX with several cabinets, first power on the expansion cabinet by setting the "I/O" switch of the power supply module(s) to position "I". - Set the "I/O" switch on the main cabinet power supply module(s) to "I". • Check the status of the indicators (see Sections 4.3 to 4.7).

Table 18:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Check the UCV-D card's system and application software releases using the AMP.	• Refer to the document [1].
• Restore the data of the old configuration.	

SHEET E-12STANDARD REPLACEMENT OF AN AXL MAIN CABINET

AVAILABILITY

- No mission capable
- 1 operator on site

DURATION

- 20 minutes

INGRÉDIENT(S)/CONSOMMABLE(S)

- N/A

Table 19:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Back up the customer configuration.	• Precautionary operation to be carried out if there is no existing copy (which is the case when previous installation operations have been carried out and the procedures followed). • Refer to [1] • In the case of remote operation, contact the remote operator before starting any operation.
• Power off the iPBX.	• Refer to Section 6.4, Stopping the system (AXD, AXL, AXS, AXS12 and AXS6)Error! No bookmark name given. • For a system with several cabinets, first power off the main cabinet, then the expansion cabinet. **Nota :** *It is advisable to stop the IPS card before powering off the iPBX.*
• Disconnect the cables.	• Disconnect the mains cable. • Disconnect the cables from the front panel of the UCV card and those on the cabinet's expansion cards and mark the cables for refitting. • For a system with several cabinets, disconnect the cable located at the rear of the cabinet.
• Remove the old cabinet.	
• Remove the UCV card.	• Pull out the UCV card from its slot using the 1/4 turn locks (see Figure 4.1).
• Retrieve the module. i-Button.	• Recover, on the UCV card, the i-button module containing the system's identifier.
• Remove the new UCV card.	• Pull out the new UCV card from its slot using the 1/4 turn locks (seeFigure 4.1).
• Install the module. i-Button.	• Install the i-button module from the old UCV card on the new card.

Table 19:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Check the configuration of the UCV card.	• As the UCV card can include daughter cards, check that it is fitted identically to the previous one, unless its configuration has been modified due to a change in its capacity (in which case, see Sections 4.3 to 4.5 or the product “Data sheet”).
• Remove and recover the i-button identification number.	• Remove and recover, at the back of the cabinet, the label with the i-Button's identifier number (the i-Button's identifier label only, not the product identification label). • Stick the i-Button's identification label on the back of the new cabinet.
• Recover the expansion cards from the old cabinet.	
• Install the cards in the new cabinet.	Expansion cards and new UCV card.
• Fit the new cabinet.	
• Install the cables exactly like in the old cabinet.	• On the front panel of the expansion cards • On the front panel of the UCV card • If the iPBX has an expansion cabinet, at the back of the cabinet • On the front panel of the power supply module.
• Connect the mains cable	• Connect one end of the mains cable to the power supply module of the cabinet and the other end to a grounded mains power point. **Attention :** *The iPBX must be powered off when installing the mains cable.* *Never connect network lines while the mains power cable is unplugged.*
• Power on the iPBX.	• Before powering on the cabinet, check that all the following tasks have been performed: - all line connections are installed, - all equipment has been connected to a grounded power point. • Power on the iPBX: - for an iPBX with several cabinets, first power on the expansion cabinet by setting the “I/O” switch of the power supply module to position “I”. - Set the “I/O” switch on the main cabinet power supply module to position “I”. • Check the status of the indicators (see Sections 4.6).
• Check the UCV card's system and application software releases using the AMP.	• Refer to the document Aastra Management Portal AXD-AXL-AXS-AXS12-A5000 Server – Operating Manual.
• Restore the data of the old configuration.	

SHEET E-13STANDARD REPLACEMENT OF AN AXS MAIN CABINET

AVAILABILITY

- No mission capable
- 1 operator on site

DURATION

- 30 minutes
- 1 Facom AZXR 10*75 Torx screwdriver for M3 screw (card).
- 1 Facom AZXR 15*75 Torx screwdriver for M4 screw (cover).

INGRÉDIENT(S)/CONSOMMABLE(S)

- N/A

Table 20:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Back up the customer configuration.	• Precautionary operation to be carried out if there is no existing copy (which is the case when previous installation operations have been carried out and the procedures followed). • Refer to [1] • In the case of remote operation, contact the remote operator before starting any operation.
• Power off the iPBX.	• Refer to Section 6.4, Stopping the system (AXD, AXL, AXS, AXS12 and AXS6)Error! No bookmark name given. • For a system with several cabinets, first power off the main cabinet, then the expansion cabinet. **Nota :** *It is advisable to stop the IPS card before powering off the iPBX.*
• Disconnect the external cables.	• **Disconnect the mains cable.** • Disconnect the cables from the front panel of the UCV card and those on the cabinet's expansion cards and mark the cables for refitting. • For a system with several cabinets, disconnect the cable located at the rear of the cabinet.
• Remove the cover from the old cabinet.	• Unscrew the two securing screws of the upper cover, at the back of the cabinet. • Remove the upper cover by sliding it backwards.
• Remove the old cabinet.	
• Remove the expansion cards.	• Unlock the cards (see Figure 4.1) and pull them out from the backplane.

Table 20:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• If required, recover the expansion ribbon cable.	• If the iPBX has two cabinets, disconnect the expansion ribbon cable linking the CPU card to the expansion cable connector.
• Recover the i-button module.	• Recover, on the UCV card, the i-button module containing the system's identifier.
• Remove the cover from the new cabinet.	• Unscrew the two securing screws of the upper cover, at the back of the cabinet. • Remove the upper cover by sliding it backwards.
• Install the i-Button module.	• Install the i-button module from the old UCV card on the new card.
• Check the configuration of the UCV card.	• As the UCV card can include daughter cards, check that it is fitted identically to the previous one, unless its configuration has been modified due to a change in its capacity (in which case, see Sections 4.3 to 4.5 or the product “Data sheet”).
• Remove and recover the i-button identification number.	• Remove and recover, at the back of the cabinet, the label with the i-Button's identifier number (the i-Button's identifier label only, not the product identification label). • Stick the i-Button's identification label on the back of the new cabinet.
• If required, connect the expansion ribbon cable.	• If the iPBX has two cabinets, connect the expansion ribbon cable (recovered from the old cabinet) linking the CPU card to the expansion cable connector.
• Install the expansion cards in the new cabinet.	• Slide the cards along the guides until they click into place and lock the cards in place using the 1/4 turn locks (see Section 4.1).
• Install the cables exactly like in the old cabinet.	• On the front panel of the expansion cards • On the front panel of the UCV card • at the back of the cabinet. Do not forget to wire the protective ground. **Attention :** *Do not connect the mains cable. The cabinet must be closed.*
• Close the new cabinet.	• In the empty slots, - screw in the metal blanking plates on the front panel of the empty slots, - fit the plastic covers and plugs on the blanking plates. • Secure the cover, - Fit the cover slightly to the rear of the cabinet and push it forward. - Tighten the two securing screws at the back of the cabinet.
• Fit the new cabinet.	

Table 20:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Connect the mains cable.	• Connect one end of the mains cable to the main cabinet and the other end to a grounded mains power point. **Attention :** *The iPBX must be powered off when installing the mains cable.* *Never connect network lines while the mains power cable is unplugged.*
• Power on the iPBX.	• Before powering on the cabinet, check that all the following tasks have been performed: - all line connections are installed, - all equipment has been connected to a grounded power point. • Power on the iPBX: - or an iPBX with several cabinets, first power on the expansion cabinet by setting the "I/O" switch on the power supply module set to "I". - Set the "I/O" switch on the main cabinet power supply module to position "I". • Check the status of the indicators (see Sections 4.6).
• Check the UCV card's system and application software releases using the AMP.	Refer to the document Aastra Management Portal AXD-AXL-AXS-AXS12-A5000 Server – Operating Manual.
• Restore the data of the old configuration.	• Refer to the document Aastra Management Portal AXD-AXL-AXS-AXS12-A5000 Server – Operating Manual.

SHEET E-14STANDARD REPLACEMENT OF AN AXS12 MAIN CABINET

AVAILABILITY

- No mission capable
- 1 operator on site

DURATION

- 15 minutes
- 1 Facom AZXR 15*75 Torx screwdriver for M4 screw (cover).

INGRÉDIENT(S)/CONSOMMABLE(S)

- N/A

Table 21:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Back up the customer configuration.	• Precautionary operation to be carried out if there is no existing copy (which is the case when previous installation operations have been carried out and the procedures followed). • Refer to [1] • In the case of remote operation, contact the remote operator before starting any operation.
• Power off the iPBX.	• Refer to Section 6.4, Stopping the system (AXD, AXL, AXS, AXS12 and AXS6)Error! No bookmark name given. **Nota :** *It is advisable to stop the IPS card before powering off the iPBX.*
• Disconnect the cables.	• Disconnect the mains cable. • Disconnect the external cables from the front panel of the UCV card, and mark the cables for refitting.
• Remove the cover from the old cabinet.	• Unscrew the two securing screws of the upper cover, at the back of the cabinet. • Remove the upper cover by sliding it backwards.
• Remove the old cabinet.	
• Remove the expansion cards.	• Unlock the cards (see Figure 4.1) and pull them out from the backplane.
• Recover the i-button module.	• Recover, on the UCV card, the i-button module containing the system's identifier.
• Remove the cover from the new cabinet.	• Unscrew the two securing screws at the back of the cabinet, • Slide the iPBX cover to the back.
• Install the i-Button module.	• Install the i-button module from the old UCV card on the new card.

Table 21:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Check the configuration of the UCV card.	• As the UCV card may be fitted with a daughter card, check that the new card is fitted exactly like the previous one, unless its configuration has been modified due to a change in its capacity (in this case, see Sections 4.6 or the product “Data sheet”).
• Remove and recover the i-button identification number.	• Remove and recover, at the back of the cabinet, the label with the i-Button's identifier number (the i-Button's identifier label only, not the product identification label). • Stick the i-Button's identification label on the back of the new cabinet.
• Install the expansion cards in the new cabinet.	• Slide the cards along the guides until they click into place and lock the cards in place using the 1/4 turn locks (see Figure 4.1).
• Close the new cabinet.	• Secure the cover, - Fit the cover slightly to the rear of the cabinet and push it forward. - Tighten the two securing screws at the back of the cabinet.
• Fit the new cabinet.	
• Install the cables exactly like in the old cabinet.	• On the front panel of the UCV card • at the back of the cabinet (mains cable). **Attention :** *The iPBX must be powered off when installing the mains cable.*
• Power on the iPBX.	• Before powering on the cabinet, check that all the following tasks have been performed: - all line connections are installed, - all equipment has been connected to a grounded power point. • Power on the iPBX: - Set the “I/O” switch on the cabinet power supply module to position “I”. • Check the status of the indicators (see Section 4.9).
• Check the UCV card's system and application software releases using the AMP.	• Refer to the document [1].
• Restore the data of the old configuration.	• Refer to the document [1].

SHEET E-15REPLACING AN EXPANSION CABINET (AXD IPBX)

AVAILABILITY

- No mission capable

OPERATORS (s)

- 1 operator on site

DURATION

- 20 minutes

INGRÉDIENT(S)/CONSOMMABLE(S)

- N/A

Table 22:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Back up the customer configuration.	• Precautionary operation to be carried out if there is no existing copy (which is the case when previous installation operations have been carried out and the procedures followed). • Refer to [1] • In the case of remote operation, contact the remote operator before starting any operation.
• Power off the iPBX.	• Refer to Section 6.4, Stopping the system (AXD, AXL, AXS, AXS12 and AXS6)Error! No bookmark name given. • For a system with several cabinets, first power off the main cabinet, then the expansion cabinet(s). **Nota :** *It is advisable to stop the IPS card before powering off the iPBX.*
• Disconnect the cables.	• Disconnect the mains cable. • Disconnect the cables connected at the back of the expansion cabinet. • Disconnect the cables from the cabinet subassemblies and mark the cables for refitting.
• Remove the old cabinet.	
• Recover the expansion cards from the old cabinet.	• Use the 1/4 turn locks to remove the card from its slot (see Figure 4.1).
• Check that the new expansion cabinet is powered off.	• “I/O” switch to position “O”.

Table 22:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Install the expansion cards.	Install the expansion cards from the old cabinet in the new cabinet. • Slide the card along the card guides until it clicks into place. • Lock the card in place using the 1/4 turn locks (see Figure 4.1).
• Install the cables exactly like in the old cabinet.	• On the front panel of the expansion cards, • connect the expansion cabinet to the main cabinet using the connection cable(s) (see Sections§ 4.5.4.1 and 4.5.4.2). • Do not forget to wire the protective ground.
• Fit the new cabinet.	
• Connect the mains cable.	• Connect one end of the mains cable to the power supply module(s) of the expansion cabinet and the other end to a grounded mains power point. **Attention :** *The iPBX must be powered off when installing the mains cable.* *Never connect network lines while the mains power cable is unplugged.*
• Power on the iPBX.	• Before powering on the cabinet, check that the following tasks have been performed: - all line connections are installed, - all equipment has been connected to a grounded power point. • Power on the iPBX: - power on the expansion cabinet then the main cabinet. - “I/O” switch on the power supply module(s) set to “I”. • Check the status of the indicators (see Sections 4.3 to 4.7).

SHEET E-16REPLACING AN EXPANSION CABINET (IPBX AXL, AXS, AXS12)

AVAILABILITY

- No mission capable
- 1 operator on site

DURATION

- 20 minutes
- 1 Facom AZXR 15*75 Torx screwdriver for M4 screw (cover).

INGRÉDIENT(S)/CONSOMMABLE(S)

- N/A

Table 23:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Back up the customer configuration.	• Precautionary operation to be carried out if there is no existing copy (which is the case when previous installation operations have been carried out and the procedures followed). • Refer to [1] • In the case of remote operation, contact the remote operator before starting any operation.
• Power off the iPBX.	• Refer to Section 6.4, Stopping the system (AXD, AXL, AXS, AXS12 and AXS6)Error! No bookmark name given. • First power off the main cabinet then the expansion cabinet.
• Disconnect the cables.	• Disconnect the mains cable. • Disconnect the cables connected at the back of the expansion cabinet. • Disconnect the cables from the cabinet subassemblies and mark the cables for refitting.
• Remove the old cabinet.	
• Recover the expansion cards from the old cabinet.	• Use the 1/4 turn locks to remove the card from its slot (see Figure 4.1).
• Check that the new expansion cabinet is powered off.	• “I/O” switch to position “O”.
• Remove the cover from the new cabinet (AXS/ AXS12/AXS6).	**This operation concerns only the AXS/AXS12/AXS6 iPBX.** • Unscrew the two securing screws of the upper cover, at the back of the cabinet. • Remove the upper cover by sliding it backwards.

Table 23:

OPERATION	DETAILS OF THE OPERATION / COMMENTS
• Check that the expansion ribbon cable has been fitted (AXS/AXS12/ AXS6).	**This operation concerns only the AXS/AXS12/AXS6 iPBX.** • Check that the expansion ribbon cable connecting the CPU card to the expansion cable connector is connected.
• Install the expansion cards.	Install the expansion cards from the old cabinet in the new cabinet. **AXL and AXS/AXS12/AXS6 iPBXs** • Slide the card along the card guides until it clicks into place. • Lock the card in place using the 1/4 turn locks (see Figure 4.1).
• Install the cables exactly like in the old cabinet.	• At the back of the RUCV card • On the front panel of the expansion cards • connect the expansion cabinet to the main cabinet using the connection cable. • Do not forget to wire the protective ground. **Attention :** *In the case of an AXS/AXS12/AXS62 cabinet, do not connect the mains cable. The cabinet must first be closed.*
• Fit the new cabinet.	
• Connect the mains cable (once the cabinet is closed if it is an AXS/ AXS12/AXS6 iPBX).	• Connect one end of the mains cable to the power supply module of the expansion cabinet (AXL) or directly to the AXS/AXS12/ AXS6 cabinet and the other end to a grounded mains power point. **Attention :** *The iPBX must be powered off when installing the mains cable.* *Never connect network lines while the mains power cable is unplugged.*
• Power on the iPBX.	• Before powering on the cabinet, check that the following tasks have been performed: - all line connections are installed, - all equipment has been connected to a grounded power point. • Power on the iPBX: - power on the expansion cabinet then the main cabinet. - “I/O” switch on the power supply module set to “I”. • Check the status of the indicators (see Sections 4.6 to check that the functional statuses provided by the indicators are correct).

8 Installing and using the IPS card

The installation and use of the IPS card are described in a special manual (see document [13]).

Caution: From R5.1(A5000 environment), it is mandatory to desactivate the embedded GSI.

9 FUNCTIONAL DIAGRAMS

This chapter contains six diagrams:

- Functional diagram of an Aastra XD in simplex configuration (Plate 9.1)
- Functional diagram of an Aastra XD in duplex configuration (Plate 9.2)
- Functional diagram of an Aastra XL, XS, XS12 and AXS6 (Plate 9.3)
- Principle of multi-site synchronisation Plate 9.4)

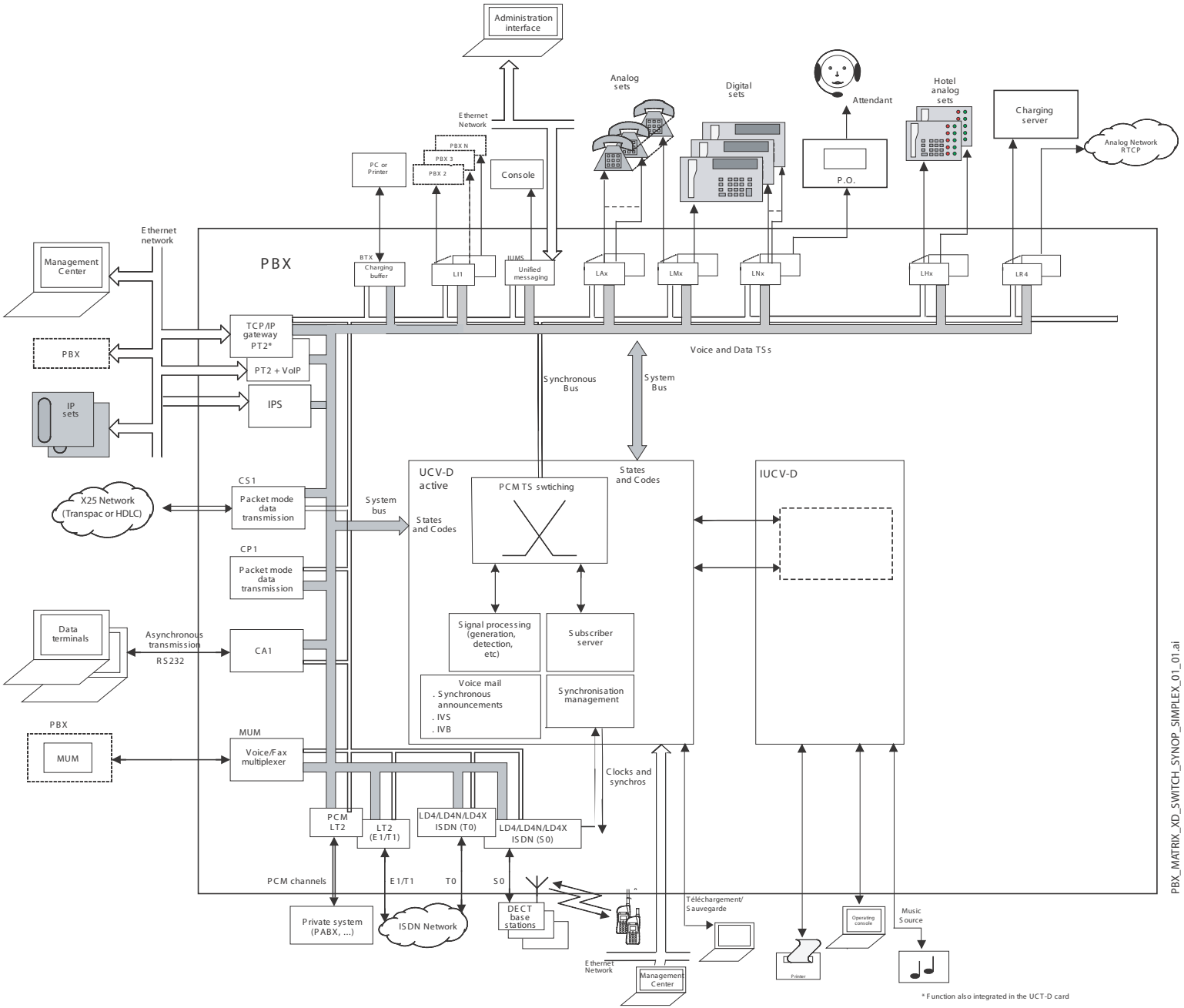


Plate 9.1 FUNCTIONAL DIAGRAM OF AN AASTRA XD IN SIMPLEX CONFIGURATION

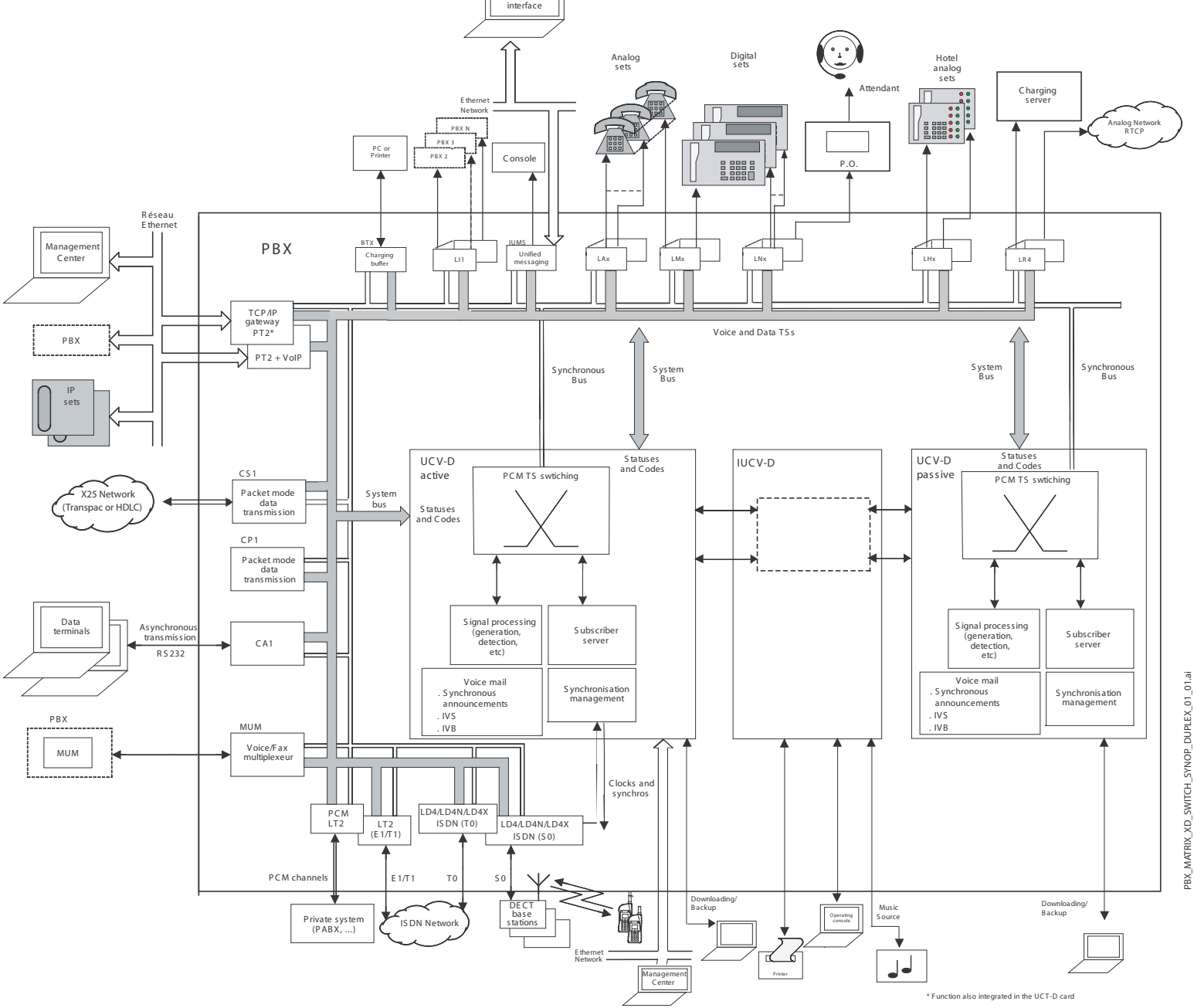


Plate 9.2 FUNCTIONAL DIAGRAM OF AN AASTRA XD IN DUPLEX CONFIGURATION

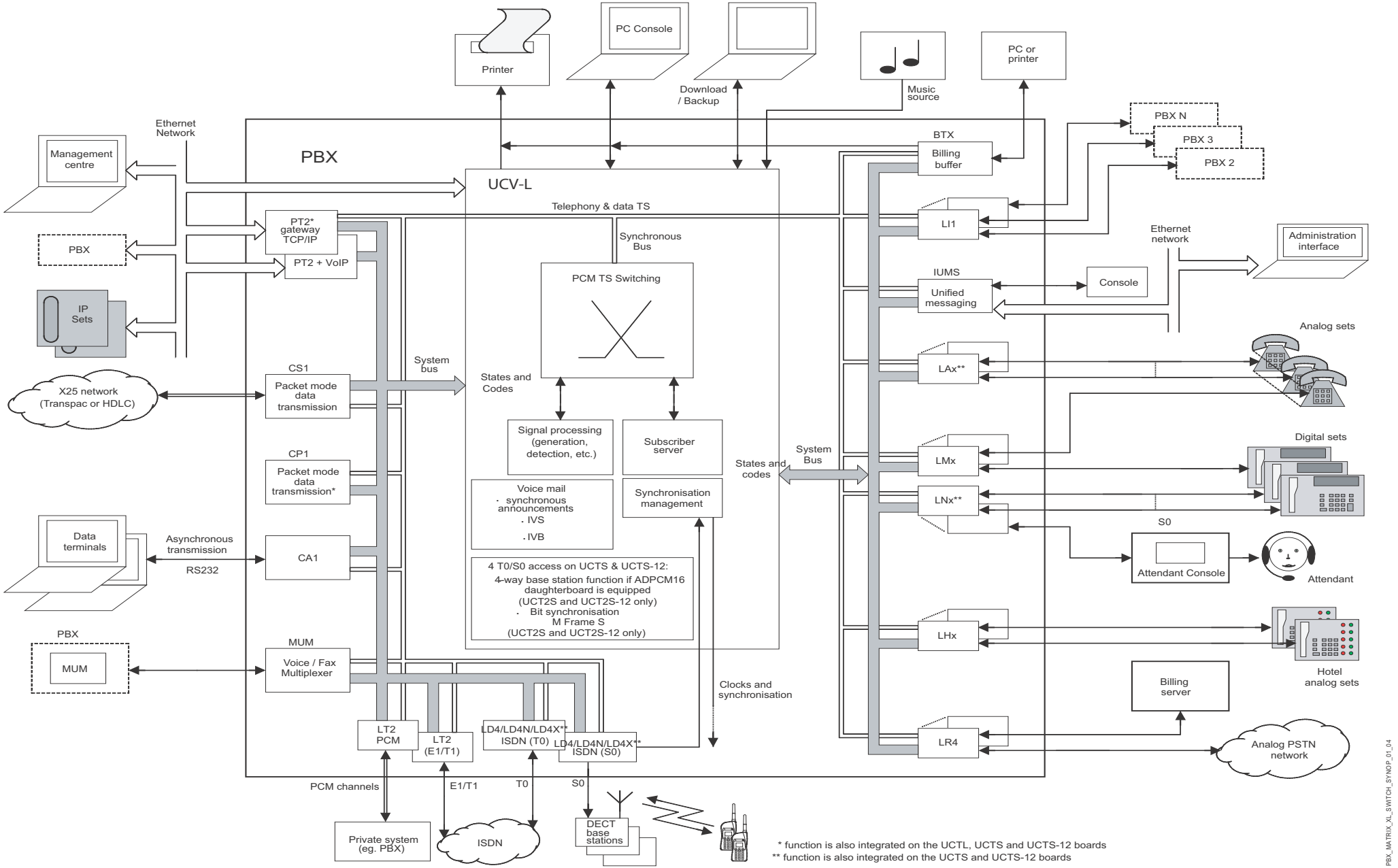


Plate 9.3 FUNCTIONAL DIAGRAM OF AN AASTRA XL, XS AND XS12

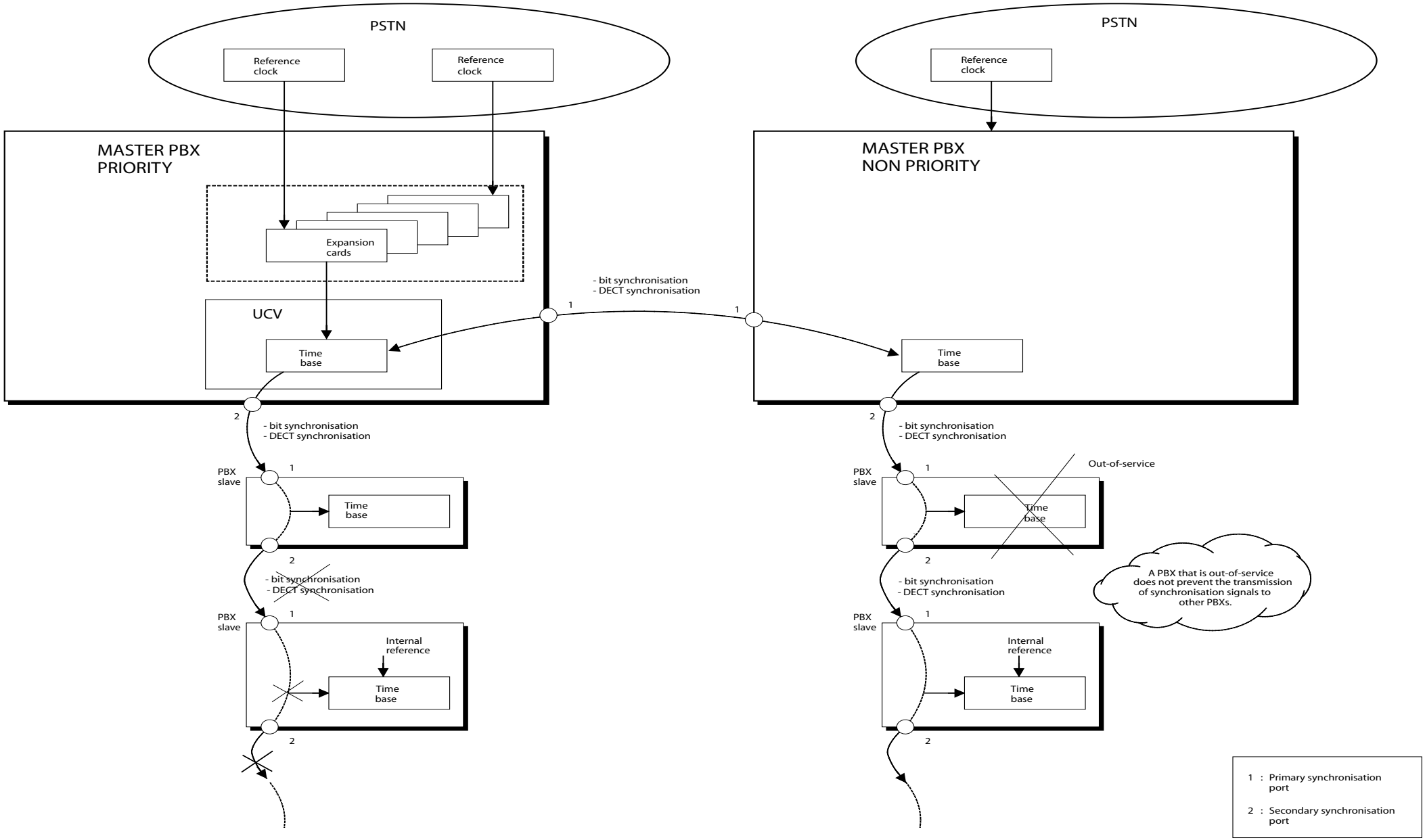


Plate 9.4 PRINCIPLE OF MULTI-SITE SYNCHRONISATION

10 INSTALLING A5000 SERVER (NON-REDUNDANT)

This chapter describes how to install the non-redundant A5000 Server application. For the redundant Aastra 5000 server, refer to AMT/PTD/PBX/0083.

10.1 Important pre-requisite

As of R5.2, the Linux operating system, Red Hat 5.4 minimum, must first be installed on the PC. Refer to the document Red Hat OS installation Manual.

The PC network must have been declared and configured (if necessary, contact the network administrator).

The PC must be connected to the network to which it is dedicated (network cable connected).

For the system to work correctly with Red Hat 5 .4:

- Deactivate SELinux (See the procedure described in the appendix to this document).
- Deactivate the firewall in order to authorise http and https requests (see the procedure described in the appendix to this document).
- Connect the USB dongle for the A5000 Server application.

10.2 Installing the A5000 Server application

- Switch on the PC on which the application is to be installed.
- Place the CD-ROM in the CD-ROM drive when Linux is started.

Attention : *When a CD-ROM is installed with the PC, installation script execution rights are not assigned by default; to configure these execution rights, see the Section "**Configuring storage device execution rights**" in the Red Hat OS Installation Manual - AMT/PTD/NMA/0040.*

- Open a "My computer" window.
- Double-click the CD icon so it can be detected by the system.

Start the installation by double-clicking the the file **install_a5000_server.sh**, located in the CDROM root.

- Click**Run**

The script is then automatically executed without the user's intervention.

Pre-configuration starts at the end of the script.

1 Country configuration (locating menu labels and displaying sets)

```
        Aastra 5000 Configuration / Country

*-------------------------------------------------*
                | Enter Country: GB
*-------------------------------------------------*
 Do you want to change configuration Y(es)/N(o) ? n
```

This screen corresponds to the configuration of the country in which the system will be installed.

- If necessary, modify the value proposed, otherwise press "**n**" (to keep the proposed value).

```
AASTRA 5000 CONFIGURATION / Country
*-------------------------------------------------*
| ENTER COUNTRY: FRA |
*-------------------------------------------------*
| => FRA |
| => ANG |
| => GER |
| => ... |
| => ... |
| => TWN |
| => BEL |
| => EXP |
*-------------------------------------------------*
DO YOU CONFIRM (Y/N)? Y
```

- Validate the modifications with the "Return" key, after confirming or rejecting them by pressing "y" or "n".

2 Configuring the licence

```
      Aastra 5000 Configuration / Licence

*-----------------------------------------------
                          --*
| Licence:                                      |
*-----------------------------------------------
                          --*
Do you want to change configuration Y(es)/N(o) ? n
```

- Enter the corresponding value of the release (optional: it may be entered later from AMP).

For a virtual machine, during first installation, if the licence is not known, it is necessary to access AM with Ctrl +i, and to follow the procedure described in Section Declaring the licences for virtual A5000 server.

Avertissement : *The licences for R5.1 or earlier cannot be re-used.*

- Validate the modifications with the "Return" key, after confirming or rejecting them by pressing "y" or "n".

3 Configuring AM7450 cohabitation

```
AASTRA 5000 CONFIGURATION / 7450

*-------------------------------------------------------------*
| | Do you want to activate 7450 cohabitation Y / [N] / N |
| *-----------------------------------------------------------*
```

- If the AM7450 application must be installed later on the same server, type in "**y**".
- Validate the modifications with the "Return" key, after confirming or rejecting them by pressing "y" or "n".

4 Configuring PARI

```
AASTRA 5000 CONFIGURATION / PARI
 AN EXISTING CONFIGURATION WAS FOUND
*-------------------------------------------------*
| | PARI :           123456789                    |
| *-------------------------------------------------*
DO YOU WANT TO CHANGE CONFIGURATION Y(ES)/N(O) ?
```

- To modify the system's PARI number, type in "**y**" and enter the corresponding value.
- Validate the modifications with the "Return" key, after confirming or rejecting them by

pressing "y" or "n".

5 Installing the services

This menu is used to install the following services:

- DHCP
- FTP
- TFTP
- SYSLOG

If you wish to manage any of these services, you must install it in advance. Installing the service enables you to modify its status and configuration later via AMP.

The FTP service (accounts and storage directories) is automatically configured when the FTP service is started by AMP. There is no automatic action on A5000 Server like on Aastra X series systems if the FTP and TMA services are started at the same time.

The TFTP service is automatically configured when the TFTP service is started by AMP. The menu Telephony service > System > Software maintenance > Tftp: loading of files is only accessible if the TFTP service is installed. This menu is used to place the firmware of terminals A6xxd, 312i and DECT-IP base stations (RFPs) in the TFTP server storage directory.

The SYSLOG service is configured manually and via the menu:
Telephony service > System > Expert > Acces processor > Debug tool> Traces > Parameters. The IP address configuration is only accessible if the SYSLOG service is installed and if the "step-by-step output" line is validated.

The DHCP service is configured manually and via the DHCP service. There is no DHCP server preconfiguration on A5000 Server like on Aastra X series system. In a redundant A5000 Server configuration, the DHCP service cannot be installed and managed by AMP. In this case, it is managed directly by the operating system Red Hat.

```
AASTRA 5000 CONFIGURATION / MANAGED SERVICE
 ACTUAL CONFIGURATION IS:
*-------------------------------------------------*
| DHCP :    0                                     |
| FTP :     0                                     |
| TFTP:     1                                     |
| SYSLOG:   0                                     |
*-------------------------------------------------*
DO YOU WANT TO CHANGE CONFIGURATION Y(ES)/N(O) ?
```

- To install a service, press "y". The next screen is used to modify the value of the DHCP, FTP, TFTP and SYSLOG fields. The values entered must be 0 (service not installed) or 1 (service installed).
- Validate the modifications with the "Return" key, after confirming or rejecting them by pressing "y" or "n".

6 Configuring service start

In case of A5000 Server/AM7450 cohabitation (see phase 3, configuring AM7450 cohabitation), the TMA service does not appear in the menu below.

The status of the FTP, TMA and DHCP services can be modified so they may or may not be started automatically. If a service is not configured to start automatically, the menu Telephony service > System > Configuration > AMP services is used to start them manually later.

The FTP service is used to download via TMA the firmware and configuration files used by Aastra terminals 53xxip and 67xxi and the terminals used by Aastra terminals 53xx. Refer to the document Installation manual Aastra 53xxip and Aastra 67xxi Aastra 53xx sets - AMT/PTD/TR/0014 .

The TMA service is used by TMA, and to manage IP and TDM terminals. Refer to the document Installation manual Aastra 53xxip and Aastra 67xxi Aastra 53xx sets - AMT/PTD/TR/0014 . The TMA service configuration is accessible via the AMP terminal service menu.

The DHCP service allows a lease to be automatically assigned to Aastra terminals 53xxip and 67xxi and negotiates with them the standard and specific parameters required to configure them. Refer to the document Installation manual Aastra 53xxip and Aastra 67xxi Aastra 53xx sets - AMT/PTD/TR/0014.

```
AASTRA 5000 CONFIGURATION / SERVICES
AN EXISTING CONFIGURATION WAS FOUND
*-------------------------------------------------*
| FTP :    0                                      |
| TMA :    0                                      |
| DHCP :   0                                      |
*-------------------------------------------------*
DO YOU WANT TO CHANGE CONFIGURATION Y(ES)/N(O) ?
```

- If the answer is YES, "y", the screen below can be used to modify the value of the FTP, TMA and DHCP fields. The values entered must be 0 (automatic service start) or 1 (manual service start via AMP).
- Validate the modifications with the "Return" key, after confirming or rejecting them by pressing "y" or "n".

7 Configuring the 67xxi deployment option

```
AASTRA 5000 CONFIGURATION / SIP 67xxI
 AN EXISTING CONFIGURATION WAS FOUND
*-------------------------------------------------*
| DEPLOYMENT XML SERVER (0/1): 1                  |
| DEPLOYMENT PASSWORD: 2345                       |
| LLDP ENABLED (0/1): 0                           |
| TERMINAL VLAN:                                  |
| PC VLAN:                                        |
*-------------------------------------------------*
DO YOU WANT TO CHANGE CONFIGURATION Y(ES)/N(O) ?
```

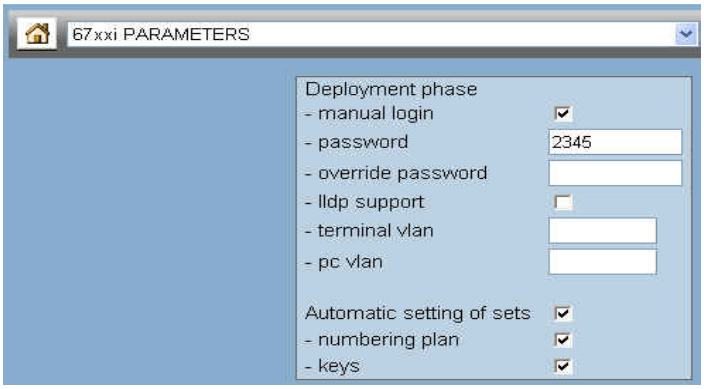
- If the answer is YES, "y", the screen below can be used to modify the value of the following fields:

DEPLOYMENT XML SERVER:

This field is used to activate (1 = yes) or deactivate (0 = no) access to the XML server used to open a deployment session.

DEPLOYMENT PASSWORD:

This password is optional and is used to open a session during deployment with the XML server for activating the `DEPLOYMENT XML SERVER PARAMETER`. The default value is 2345, but it can be modified. This value can also be displayed and modified in the AMP menu **Subscribers>67xxi terminals parameters>Parameters**.



LLDP ENABLED:

This field is used to activate the LLDP protocol in the terminal, (1 = yes) or no (0= no).

VLAN ID and VLAN PORT:
These parameters are used to define the VLAN dedicated to Aastra terminals A67xxi. They are not obligatory on simple networks.

- Validate the modifications with the "Return" key, after confirming or rejecting them by pressing "y" or "n".

8 Configuring Name & IID

The system's general parameters declaration screen opens (name IID (system identification number)):

```
AASTRA 5000 CONFIGURATION / Name&IID
*-----------------------------------------------*
| DO YOU WANT TO CONFIGURE NAME/IID (Y/N): Y |
```

- If you answer YES, "**y**", the next screen allows you to declare the system's general parameters (11 digits).

```
AASTRA 5000 CONFIGURATION / Name&IID

*-----------------------------------------------*
| NAME: A5000 |
| IID: 00130927001 |
*-----------------------------------------------*
DO YOU WANT TO CHANGE CONFIGURATION Y(ES)/N(O) ? Y
```

- Validate the modifications with the "Return" key, after confirming or rejecting them by pressing "y" or "n".

9 Configuring call distribution

```
AASTRA 5000 CONFIGURATION / Call Dist
*-----------------------------------------------*
| DO YOU WANT TO CONFIGURE CALL DISTRIBUTION: Y |
*-----------------------------------------------*
```

- Press "**Return**" to confirm, after entering "**y**" or "**n**".

If the answer is "**y**", enter the corresponding values.

```
AASTRA 5000 CONFIGURATION / Call Dist
AN EXISTING CONFIGURATION WAS FOUND
*-----------------------------------------------*
| SUBSCRIBER: 3005 |
| DID: 4000 |
*-----------------------------------------------*
DO YOU WANT TO CHANGE CONFIGURATION Y(ES)/N(O) ? Y
```

SUBSCRIBER:

This field is used to assign a subscription number as day and reduced number to call distribution 0. This number is assigned if it corresponds to an internal subscription which can be added to a call distribution service, or if it corresponds to the number of a subscription that may be on the multi-site network (A5000 Server).

DID:

This field is used to assign a DID number to call distribution service0. Authorised characters are " 0123456789ABCDE".

- Validate the modifications with the "Return" key, after confirming or rejecting them by pressing "y" or "n".

10 Configuring the numbering plan length

```
AASTRA 5000 CONFIGURATION / NL
*-------------------------------------------------*
| DO YOU WANT TO CONFIGURE NUMBERING LENGTH: Y |
*-------------------------------------------------*
```

- Press "**Return**" to confirm, after entering "**y**" or "**n**".

If the answer is "**y**", enter the corresponding values.

The field is used to define the internal number length to take into account (2 to 6).

```
AASTRA 5000 CONFIGURATION / NL

*-------------------------------------------------*
| NUMBERING LENGTH: 4 |
*-------------------------------------------------*
DO YOU WANT TO CHANGE CONFIGURATION Y(ES)/N(O) ? Y
```

- Validate the modifications with the "Return" key, after confirming or rejecting them by pressing "y" or "n".

```
AASTRA 5000 CONFIGURATION / Subscribers
*-----------------------------------------------*
| DO YOU WANT TO CONFIGURE SUBSCRIBERS (Y/N): Y |

*-----------------------------------------------*
```

If the answer is "**y**", enter the corresponding values for the different fields described below.

```
AASTRA 5000 CONFIGURATION / Subscribers

*-----------------------------------------------*
| CREATION: 1|
| FIRST: 3000 |
| LAST: 3999 |
| FIRST DID: 3000 |
| FIRST PUBLIC DID: +33(0)130923000 |
| COMMON SUBSCRIBER: 3500 |
| ADDITIONAL SUBSCRIPTIONS: 40 |
*-----------------------------------------------*
DO YOU WANT TO CHANGE CONFIGURATION Y(ES)/N(O) ? Y
```

CREATION:

This field may be used to inhibit automatic subscriber creation. This field may take on the values 0 (= creation inhibited) or 1(= creation authorised).

The **numbering length** field defined on the previous screen contains the internal number length to take into account (2 to 6). If this is a valid value, the fields **first**, **last**, **common subscriber** will not be taken into account. Otherwise, they will be ignored.

FIRST:

This field contains the first internal subscription that can be created automatically.

LAST:

This field contains the last internal subscription that can be created automatically.

FIRST DID:

This field is used to create the external block 0 associated with the internal number block [first, last]. Authorised characters are " 0123456789ABCDE". For this block to be created, this number must belong to an incoming number plan.

FIRST PUBLIC DID:

This field is used to associate a public number (format: 0130967000 or +33(0)130967000) with the DID number for block 0. This ASCII string will be truncated to 20 characters.

COMMON SUBSCRIBER:

This field is only read and taken into account if it is in the complete block and if this number exists already. If this is not the case, or if the field does not exist, they are assigned a default number. If their value is 0, they will not be assigned any number. The **common subscriber** field must always have a number.

ADDITIONNAL SUBSCRIPTIONS:

This field indicates the number of further internal subscriptions to create.

Managing the assignment of numbers to subscriptions:

Create a general-purpose subscription.

If automatic creation is authorised, for each subscriber equipment detected, create a subscription, assign it a DID number (read in the external block), or assign it a voice mail box if creation is authorised. Then update its LDAP directory record with the internal number and possibly DID number. Then assign this subscription to the detected equipment and then go to the next equipment.

After processing all the equipment, if automatic creation is allowed, create as many additional subscriptions as necessary (and as possible). Assign them a DID number (read in the external block) and a voice mail box if automatic creation is authorised, then update their LDAP directory record with the internal number and possibly DID number.

- Press "**y**" and confirm by pressing "**Return**".

12 Dedicating the SNMP daemon

The following screen may be used to dedicate the SNMP demon (only for A5000 Server).

```
AASTRA 5000 CONFIGURATION / SNMP
*-------------------------------------------------*
| WOULD YOU DEDICATE YOUR SNMP DEAMON? [Y]/N: Y |
| IF YOU DON'T WANT, PLEASE CONSULT THE INSTALL DOC |
```

- Press "**Return**" to confirm, after entering "**y**" or "**n**".
- The screen then displays a summary of the configuration made (example):

```
| SUMMARY:
*-------------------------------------------------*
| NAME = A5000                                    |
| IID = 00130927001                               |
| SUBSCRIBER = 3005                               |
| DID = 4000                                      |
| NUMBERING LENGTH = 4                            |
| COUNTRY = FRA                                   |
| LICENCE = 123456789123                          |
| PARI =                                          |
| START UP TYPE = TOTAL                           |
| DEDICATED SNMPD = Y                             |
| COHABITATION MODE =  N                          |
*-------------------------------------------------*
DO YOU WANT TO APPLY YOUR CHANGE Y(ES)/N(O)/R(ECONFIGURE) ? Y
```

If the summary is not correct:

- Press "**r**" to restart the preconfiguration (from the first “Choose country” screen).

If the summary is correct:

- Press "**y**" if the values displayed are correct and confirm by pressing "**Return**".
- **Then restart the system (mandatory).**

The configuration phase is complete.

Initial installation is complete and you can now configure the site (see Aastra Management Portal operating manual).

10.3 Accessing the (AMP) user interface

The operating console must be connected to the same network as the Aastra series system (CPU card LAN port).

- Open a web browser installed on the operating console (Internet Explorer, for instance).
- Enter the IP address defined for the system: https://@IP (secure access mode)

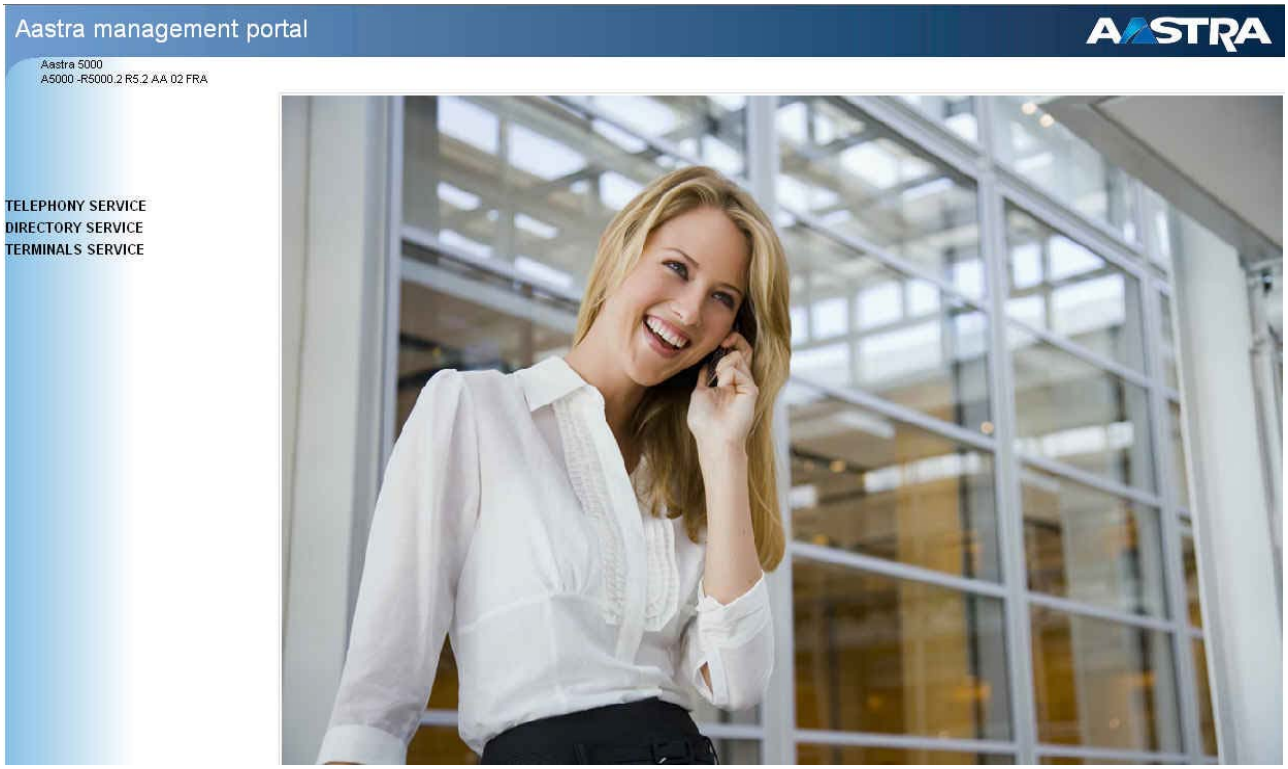
Note : *Address defined while installing the Redhat OS corresponding to the IP address of the A5000 Server network card.*

- Some security windows for this "https" access mode are then displayed successively; enter “YES” for each of them.
- The web browser (Internet Explorer) displays a security alert when connecting to the AMP; this alert can be deactivated. Refer to the appendix to this document 11.4

A login window opens.

- Enter the default access login: admin
- Enter the default access password: admin

The AMP welcome screen is displayed.



10.4 Declaring the licences for virtual A5000 server

A5000 Server may be virtualised in R5.2 SP1 and later. In this case, the dongle is equally virtual and is delivered with the A5000 Server package.

For a first installation, the licence is not otained directly and depends on the installation code to be generated from AMP.

This installation code is specific to each iPBX.

It must first be generated by the installer (from AMP).

This code must then be sent to the manufacturer who in turn sends the actual licence.

The detailed procedure is as follows:

Nota : *It is better to use Internet Explorer to access AMP; this will make it easier to copy the values required to generate the licence. See Installation code below.*

In Menu **TELEPHONY>SYSTEM>Info>Licences,** enter successively:

- The identification number
- The IP address of the virtual machine
- The system IID number.

Important : *All these fields must be filled in.*

- Then click the **Installation code generation** button.

The installation code frame then gives the value of the installation code.

- Click **OK** to close the window.
- Log on to the licence server **http://support.aastra.fr/akop/external.php** and enter this installation code.

This server then generates the actual licence for the functions specified during the order.

- Copy this licence (to a .txt file for instance).

Return to the same menu **TELEPHONY>SYSTEM>Info>Licences**.

- Enter this licence in the **keycode** field of this same menu.

The functions in question are then authorised.

It is advisable to store this value in a text file.

If later the characteristics of the IP address and IID number system are modified, the installation code will be generated following the same procedure.

10.5 Resetting the manufacturer's password (in case of loss)

The default manufacturer's password can be reset if the user loses the manufacturer's access code defined from the menu **TELEPHONY>SYSTEM>Configuration>Users/System accounts** (if the user had chosen its modification).

This may become necessary if the user loses or forgets this manufacturer's access code.

Rappel : *The manufacturer's access code may be modified to reinforce system security. In this case, neither the user nor the manufacturer (AASTRA) will have access to AMP in manufacturer mode (see the document AMT_PTD_PBX_0080 for information about password management).*

Preliminary operation

Contact AASTRA's customer service to obtain the values Enter Identifier and Enter Key which will be required during the procedure described below. You also need to provide the (USB dongle) ID number. This number will be provided to AASTRA in order to generate the values Enter Identifier and Enter Key.

Procedure

On the desktop hosting Aastra 5000 server:

- Copy the "**Reconfigure Standard**" icon, rename this icon to "**Reconfigure CTRL+ i**".
- Right-click the icon to enter the "**Properties"** menu.
- Select the "**Launcher**" tab.
- In the "**Command**", field, delete the **"-standard**" string.

The string must be as follows:

```
./conftools/upd_config.sh -dontquit -config
```

- Close the **"Properties**" window.
- Click the "**Reconfigure CTRL+ i"**icon.

- The screen then displays the different configuration modes.

```
Configuration mode (F/T/S/P/E)
- F: Factory mode
- T: Total mode
- S: Standard mode
- P: Password reset
- E: for Exit
```

- Select "**P**" mode to enter the pre-configuration menus.
- In the next screen, enter the values **Enter Identifier** and **Enter Key** provided by AASTRA.

```
AASTRA 5000 CONFIGURATION / NETWORK

*-------------------------------------------------*
| ENTER IDENTIFIER : IPNH123LMNVKGH5U
| ENTER NETWORK MASK: POULKJEPOSD5Q9/P
| *-----------------------------------------------*
PLEASE_ENTER_A_VALID_ID_KEY
```

- Press "**Return**" to confirm.
- Then answer "**Y(es)**" to the next questions to complete the procedure.

At the end of the procedure, the manufacturer's default login and password are regenerated and can be used again.

Restart the A5000 Server application, so this reset operation can be taken into account.

The manufacturer's default access code is also reset in the menu **TELEPHONY>SYSTEM>Configuration>Users>System accounts**.

The AMP access login/password are reset:

- Default access login: **admin**
- Default access password: **admin**

10.6 Massive import from the massive creation form

To avoid repetitive tasks on AMP, massive import consists in first creating in an Excel form a set of configuration data listed for the site.

This form is then converted to a format compatible (**.csv)** with Aastra 5000 Server.

The file thus generated can be imported from AMP, Menu **System>Software maintenance>Massive import**.

Refer to Section 11.4for information on how to use this form.

10.7 Additional configurations

10.7.1 Starting and viewing the services

You can configure the services (LDAP, SNMP, GSI, FTP, TFTP, etc.) and display their status from the "**SYSTEM>Configuration>Services**" menu of Aastra Management Portal. See Aastra Management Portal operating manual.

10.7.2 Declaring an NTP time server

It may be necessary to synchronise an NTP server, especially for some terminal types.

The NTP server address can be defined, and NTP activated in the menu "**System>Administration>Date and time**", by selecting the tab "**Time server synchronisation protocol**".

10.8 Upgrading Aastra 5000 Server software R5.1 to R5.2

Note : *See also Aastra Management Portal operating manual.*

10.8.1 Principle

This R5.2 upgrade procedure applies to A5000 Server systems already working in R5.1.

To upgrade to R5.2, you must:

- Make a backup before starting the upgrade procedure.
- Upgrade the Linux OS to 5.4
- Reinstall the Aastra 5000 Server R5.2 software
- Restore R5.1 data in the new R5.2 environment
- The new software licence associated with R5.2 must be retrieved before starting the procedure.

Note : *Linux Redhat 5.4 may equally be fully reinstalled without going through the upgrade phase. In this case, refer to document Red Hat OS Installation manual. Then reinstall the Aastra 5000 Server R5.2 software.*

10.8.2 Upgrading Red Hat 5.4

- Insert the RHEL 5.4 software DVD in the DVD drive of the master A5000 Server PC, then restart the A5000 Server.
- On **boot:** prompt, press **Enter.**
- Click **Skip** to start the upgrade without testing the DVD.
- Click **Next**, then select the language: **English**
- Select the keyboard layout: **English**
- Select **Ignore system number input** then click **Validate.**
- Confirm by clicking **Ignore** again.
- Select **Upgrade an existing system** then click **Next**.
- Select **Upgrade the start charger configuration** then click **Next**.
- Click **Next** to start upgrading Red Hat Enterprise R5.4.
- At the end of the installation, remove the Red Hat 5.4 DVD from the drive then click **Restart**.

10.8.3 Checking the release of Red Hat Enterprise

To check the installed Redhat release:

- Restart the A5000 Server PC then log on as **root**.
- Open a terminal window: go to the menu File > Open in a terminal.
- Type in the command: **cat /etc/redhat-release**

10.8.4 Installing the A5000 Server R5.2 application

Since this phase of the procedure is the same as the one described for a new system, see Section Installing the A5000 Server application.

The R5.2 licence can be declared using Ctrl + i, or later from AMP, since the R5.1 licence is not recoverable.

10.8.5 Restoring the R5.1 data

Refer to Section Backing up and restoring the configuration.

10.9 Upgrading Aastra 5000 Server R5.2 software

Note : *See also Aastra Management Portal operating manual*

10.9.1 Principle

This procedure applies to systems already working in R5.2 and which the user wishes to upgrade to a release above R5.2.

A backup must be made before starting the upgrade procedure.

The software licence associated with the working R5.2 will be retained for upgrade to later releases.

The different modes are:

- From AMP,
- From Aastra Management AM 7450 (TBC).

Nota : *During the restart phase following the upgrade phase, communications are interrupted.*

10.9.2 Upgrading the software from AMP

A software upgrade may be of several types:

- New and complete officially available release (SA), example: X_A5000_R5.2_SP1_B700.tar.gz
- Software upgrade for a given SA release, which corresponds to functional enhancements, example: X_A5000_R5.2_RC_D101.tar.gz
- Upgrade for a given release, which only corresponds to anomaly corrections, example: X_A5000_R5.2_SP1_B701.tar.gz.

The A5000_Infra software delivery directory may, therefore, contain several directory types corresponding to these different types of upgrade:

- **Upgrade** for software upgrade releases
- **Delta** for anomaly corrections.

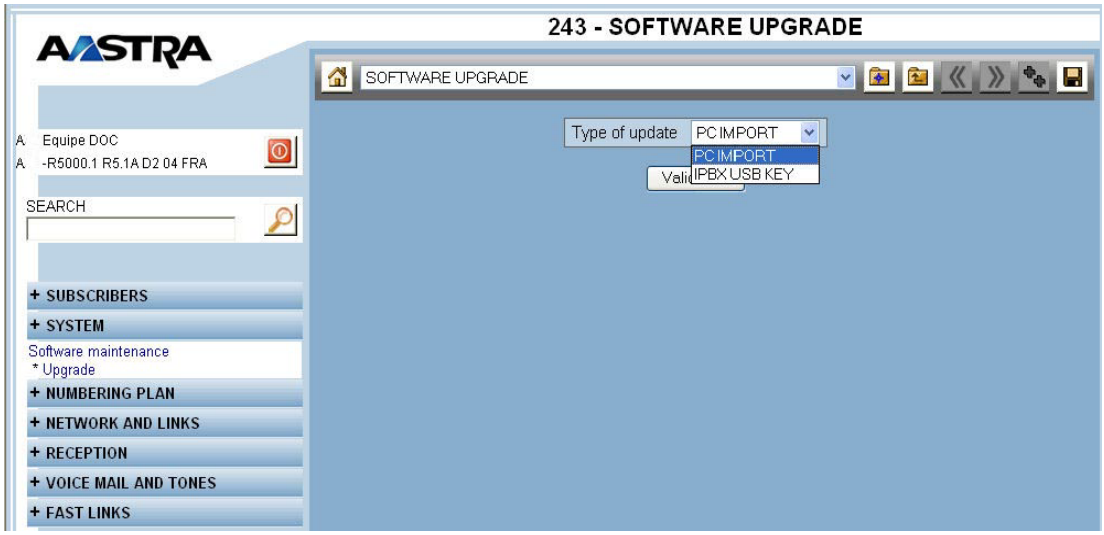
These software elements will be loaded on the Compact Flash card located on the Aastra series CPU card.

The A5000 Server application software is upgraded from the AMP, menu **SYSTEM>Software maintenance>Upgrade**.

Linux Redhat 5.4 is upgraded on the PC on which A5000 Server is installed.

Two media types can be used:

- CDROM
- USB key



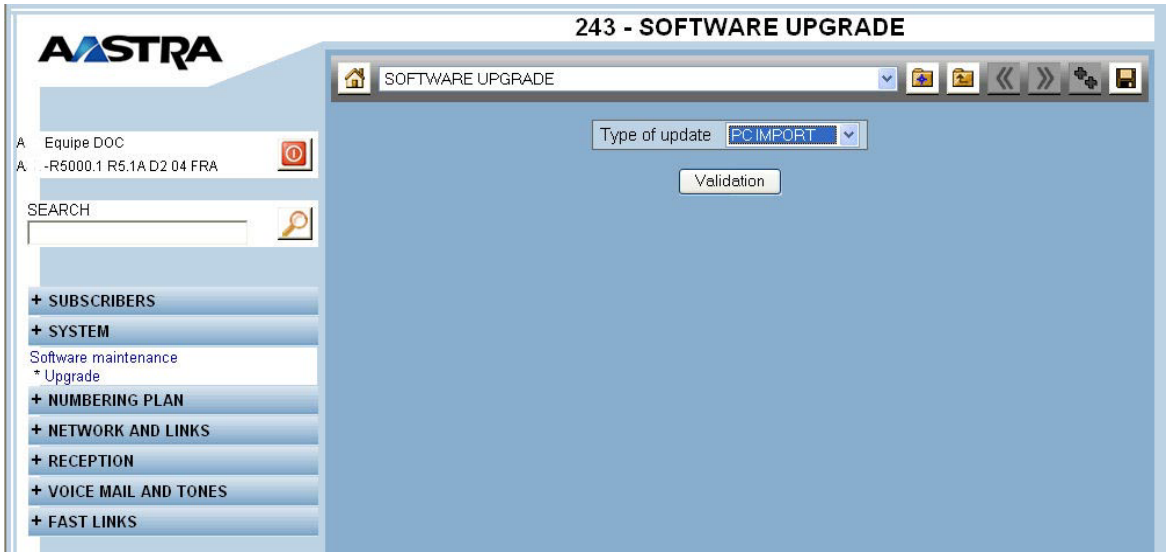
Insert the CD in the (AMP) client PC on which the software update commands are executed.

10.9.2.1 Loading the application

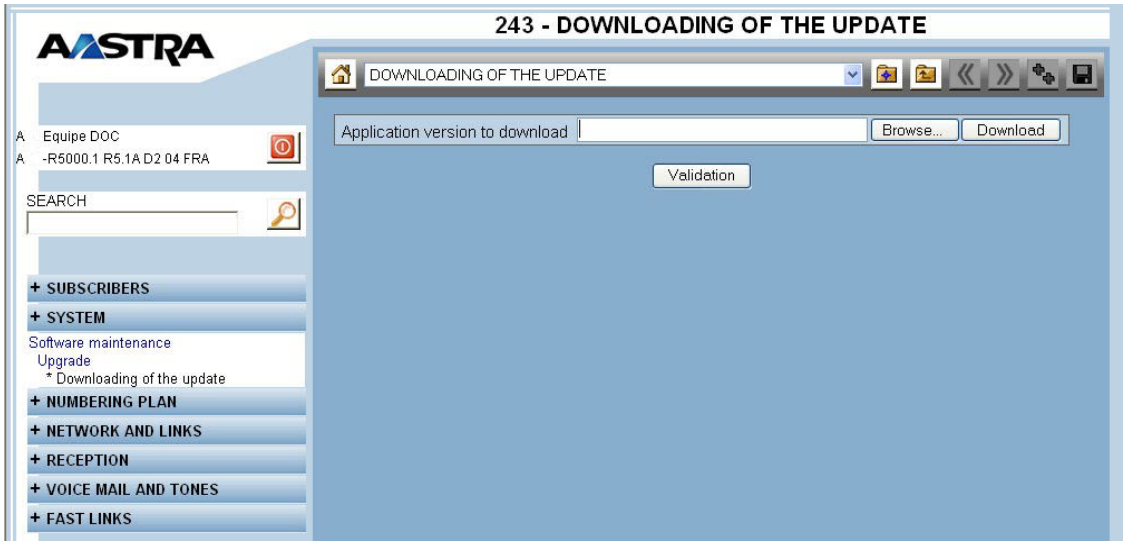
The available modes are:

- PC import
- iPBX USB key

10.9.2.1.1By PC import

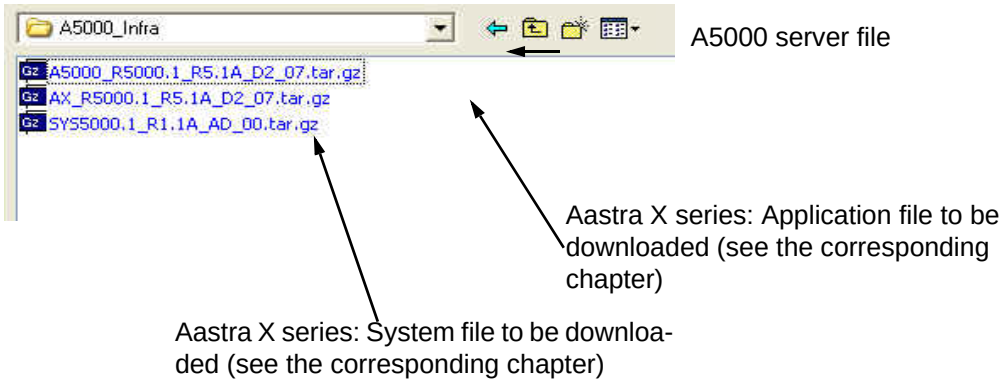


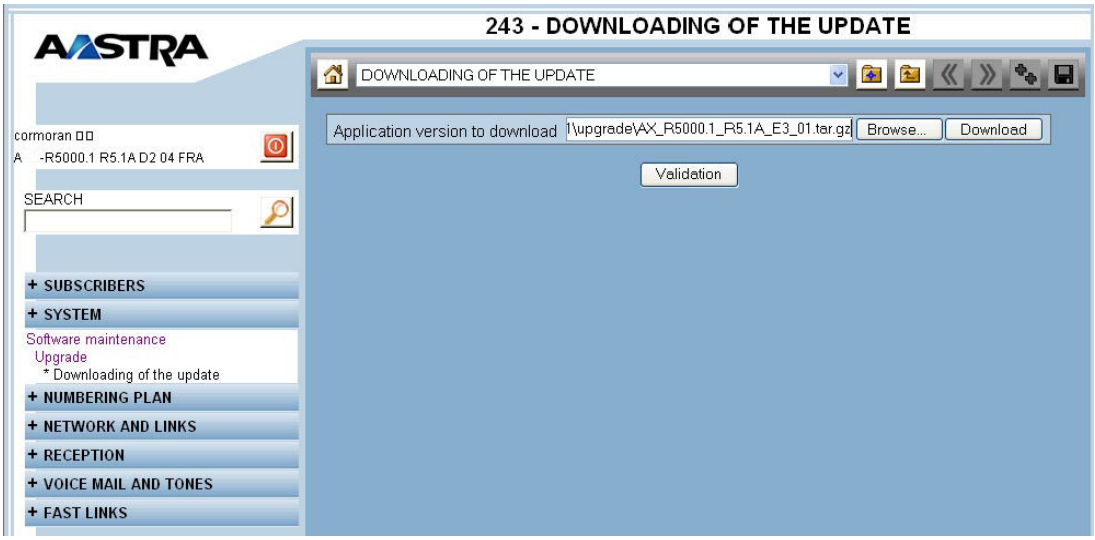
- Select " **PC IMPORT** ".
- Confirm.



- Indicate the access path for the directory containing the file, using the "**Browse**" key.
- If the path is known, enter it directly in the corresponding field.

The file to be loaded is available in the **A5000_Infra** folder of the **A5000_R5000.2_R5.2_A5_01.tar.gz** CD-ROM (example).


A5000_Infra
A5000_R5000.1_R5.1A_D2_07.tar.gz
AX_R5000.1_R5.1A_D2_07.tar.gz
SYS5000.1_R1.1A_AD_00.tar.gz
A5000 server file
Aastra X series: Application file to be downloaded (see the corresponding chapter)
Aastra X series: System file to be downloaded (see the corresponding chapter)



- Select " **Download** ".

A message indicates the progress of the downloading phase.

- Click "**Validate**".

The switchover window is then activated (See Section 10.9.3).

10.9.2.2.2By USB key

Not available with this release

10.9.3 Switchover

System switchover in the new version loaded is proposed in two modes:

- IMMEDIATE
- DEFERRED.

These two modes are explained in the Aastra Management Portal operating manual AXD-AXL-AXS-AXS12-A5000 Server – Operating manual

The system restarts automatically after the switchover phase.

In case of deferred switchover, the upgrade operation will be run by the system on the date and time indicated in the DATE and HOUR fields.

The system will restart automatically after (deferred or immediate) switchover.

The next phase is to validate or save this new release definitely. See to the next paragraph.

10.9.4 Restarting and validating the new version

After the software is upgraded, the installed version is not automatically validated during switchover. You must validate the new version manually after noticing that it is running satisfactorily.

You can validate it through the menu "**SYSTEM > Restart request**".

As long as the new version is not validated:

- it remains "**in test**",
- It is possible to restore the previous release.
- It is not possible to carry out a restore operation on this version.

It is advisable to validate the new version as quickly as possible (once

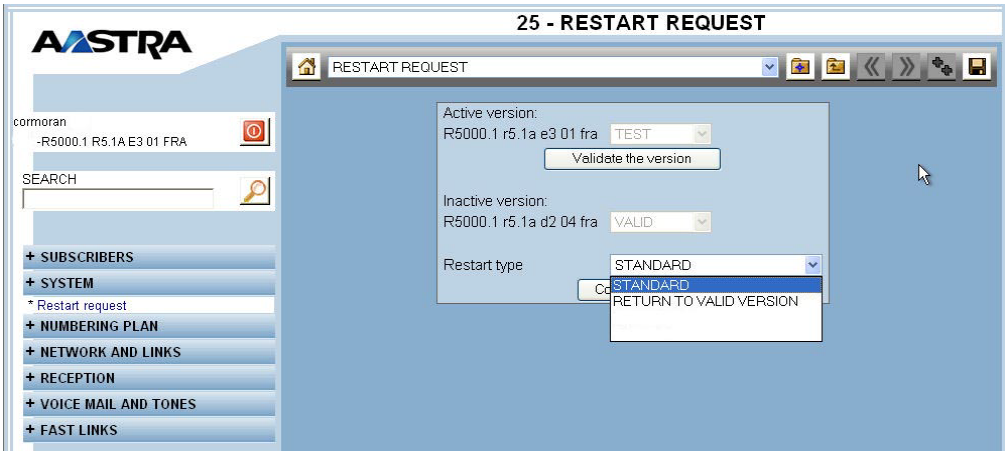
you observe a normal operation).

Procedure

Validation and possible cancel requests are proposed in the menu "**SYSTEM>Restart request**" as indicated below.

- To validate the release "**in test**", click "**Validate the version**". The system restarts automatically, declaring the release as valid.

If you do not wish to validate the release "**in test**" but to return to the previous release, select "**Validate the version**" and click "**Confirm**". The system restarts automatically with the previous release.



For other options, see Aastra Management Portal AXD-AXL-AXS-AXS12-A5000 Server – Operating manual.

10.9.5 Via Aastra Management AM 7450

See the document Aastra Management 7450 (AM 7450) User manual.

10.10 Upgrading the redundant A5000 server

See Installation manual for redundancy and double attachment on A5000 Server.

10.11 Backing up and restoring the configuration

Backup and restore operations are performed from Aastra Management Portal. See Aastra Management Portal operating manual.

11 APPENDICES

11.1 Taking the security certificate into account

When the AMP is first accessed via the web browser (Internet Explorer), a security alert is displayed because the company's certification is not recognised automatically.

Therefore, you have to indicate to the web browser that the company is a reliable certification authority.

For Aastra X series (AXD, AXL and AXS) iPBXs

- Open a web browser installed on the operating console (Internet Explorer, for instance).
- Enter the IP address defined for the system: https://@IP (secure access mode)

Note : *Default address in factory setting: 192.168.65.01*

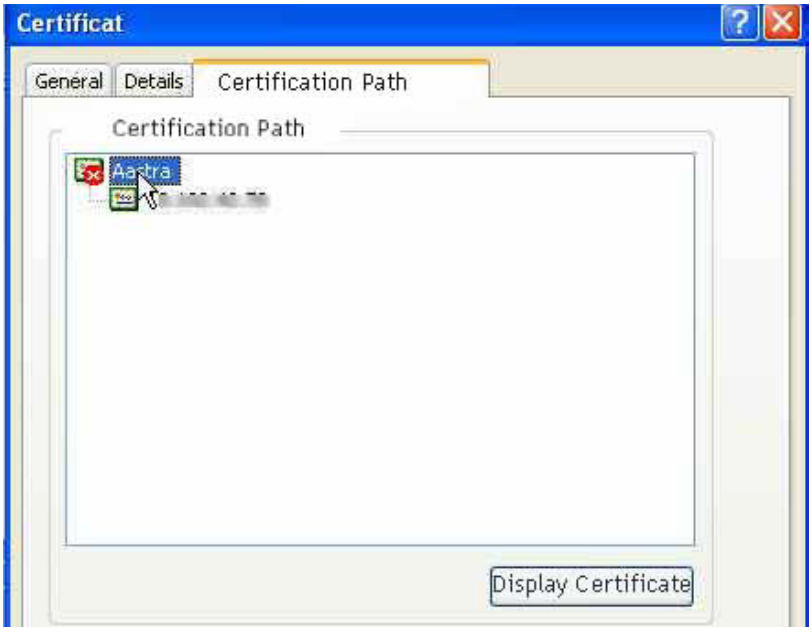
- Some security windows for this "https" access mode are then displayed successively.

Security Alert
You are about to view pages over a secure connection.
Any information you exchange with this site cannot be viewed by anyone else on the Web.
In the future, do not show this warning
OK
More Info

- Click "**OK**".

Security Alert
Information you exchange with this site cannot be viewed or changed by others. However, there is a problem with the site's security certificate.
The security certificate was issued by a company you have not chosen to trust. View the certificate to determine whether you want to trust the certifying authority.
The security certificate has expired or is not yet valid.
The security certificate has a valid name matching the name of the page you are trying to view.
Do you want to proceed?
Yes
No
View Certificate

- Click "**Display certificat**e".



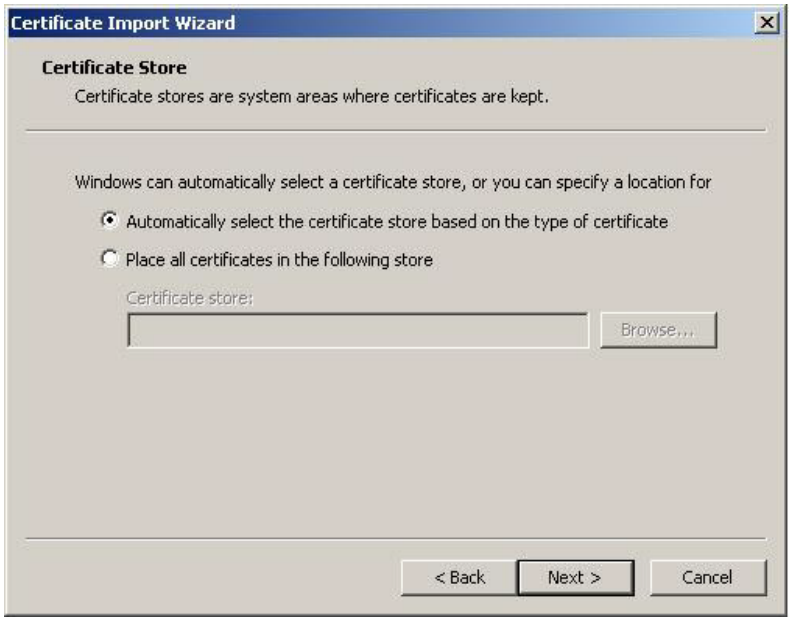
- In the following screen, select the "**Certification access path**" tab then click the root certificate (in the example "Aastra").
- Click "**Display certificat**e".

- Click "**Install certificate**".

The installation then starts.

Certificate Import Wizard
Welcome to the Certificate Import Wizard
This wizard helps you copy certificates, certificate trust lists, and certificate revocation lists from your disk to a certificate store.
A certificate, which is issued by a certification authority, is a confirmation of your identity and contains information used to protect data or to establish secure network connections. A certificate store is the system area where certificates are kept.
To continue, click Next.
< Back
Next >
Cancel

- Click "**Next**"


Certificate Import Wizard
Certificate Store
Certificate stores are system areas where certificates are kept.
Windows can automatically select a certificate store, or you can specify a location for
Automatically select the certificate store based on the type of certificate
Place all certificates in the following store
Certificate store:
Browse...
< Back
Next >
Cancel

- Click "**Next**"

- Click "**Finish**"

A security warning is displayed.

Root Certificate Store
Do you want to ADD the following certificate to the Root Store?
Subject : Aastra, Aastra, Aastra, GUY, IDF, FR
Issuer : Self Issued
Time Validity : Monday, October 15, 2007 through Tuesday, October 14, 2008
Serial Number : 00
Thumbprint (sha1) : 0F4D9C4A 4C806DC8 563DC4C3 A40E0080 0FDE7A04
Thumbprint (md5) : 8C06032E 7FA57F93 4741CA07 D883828F
Yes
No

- Click "Yes".

The certificate is installed.

- Click “OK"

The installation is complete; all the sites certified through the root name (in the example “Aastra”) will no longer display the Internet Explorer security alert.

For Aastra 5000 (A5000 Server)

- Open a web browser installed on the operating console (Internet Explorer, for instance).
- Enter the IP address defined for the system: https://@IP (secure access mode)

Note : *Default address in factory setting: 192.168.65.01*

In the **Certificate** screen

- Select **Accept this certificate definitely**then click **OK.**

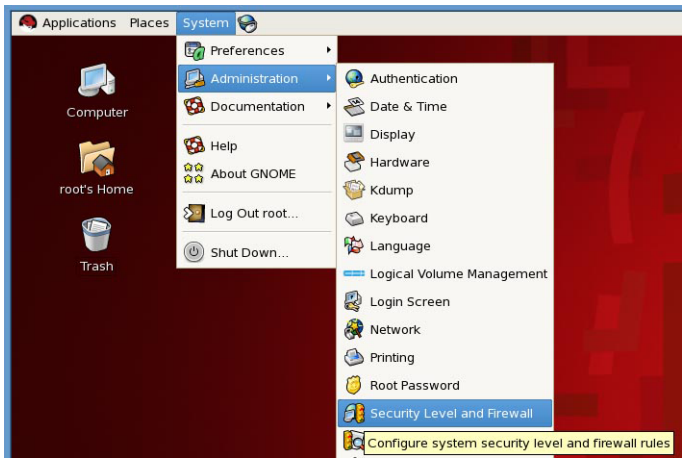
In the **Security warning** screen

- Click **OK.**

11.2 ACTIVATING/DEACTIVATING SELINUX IN RED HAT 5

From the PC on which AASTRA 5000 is installed

SELinux is activated or deactivated in the "**SELinux**" tab of the menu "**System/ Administration/Security level and firewall**":



11.3 CONFIGURING THE FIREWALL FOR ACS

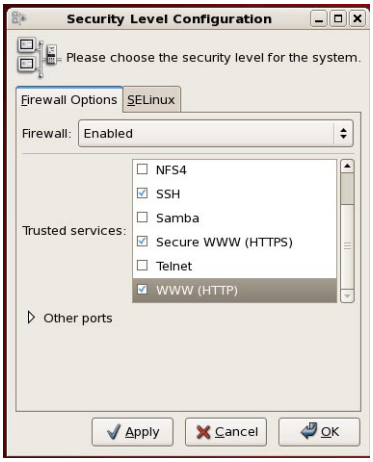
The installation of Red Hat Enterprise Linux 5 is described in the “Red Hat Installation Guide” (see reference documents). For a simplified installation, this document recommends that the firewall be deactivated.

For the ACS application, the use of a firewall is, nevertheless, recommended in order to secure the network. In this case, the firewall must be configured in such a way that it will not filter the ports required by the application to work properly.

This paragraph specifies the Red Hat configuration elements required for ACS installation.

To access the firewall configuration menu:

Click **System** > **Administration** > **Security level and firewall**.



In the firewall options tab:

1. Select the firewall option **Active**.
   The selection areas become accessible.
2. In the **Trusted services** list, tick the minimum services to be activated:
   - FTP
   - SSH
   - HTTP
   - HTTPS
3. Click the **Other ports** title bar.
4. To add other ports, click **Add**.
   An **Add port** input window opens.
5. In this window, enter the port number and select a protocol then click **Confirm**.
   The port is added to the list.
6. When all the ports are configured, click **Apply** then **Confirm**.
   The firewall is configured.

The following table gives the list of ports to open for the A5000 server installation.

Protocole¤	Port(s)¤	Application¤
TCP¤	3198-3199¤	i2052/i2070/i7xx¤
TCP¤	3209¤	I2070¤
TCP¤	3200·et·+¤	Se·référer·à·la·liste·dans·le·tableau·ci-après¤
TCP¤	21¤	Téléchargement·675xi/53xxip·(FTP)¤
TCP¤	69¤	Téléchargement·675xi/RFP·(TFTP)¤
TCP¤	443¤	Transfert·de·fichiers·(AM7450)¤
TCP¤	389¤	LDAP¤
UDP¤	40000-40078¤	i2052/i7xx/675xi/PTx¤
UDP¤	30000-30001¤	53xxip¤
UDP¤	5060¤	675xi/53xxip/OMM/RFP¤
UDP¤	123¤	NTP·Server¤
UDP¤	67-68¤	DHCP·Server¤
UDP¤	161-162¤	SNMP·Agent¤
UDP¤	1998/41000-41999¤	Tunnel·DATA¤
UDP¤	16320-16391¤	RFP¤
UDP¤	8106-8107¤	RFP¤

Additional items on the list of TCP ports used by the internal servers of A5000 Server

TCP-IP Port	INTERNAL SERVER or Server ACCESS	Server Address	Mode	Call Data
3200 to 3203	reserved			
3204	KITAXE Server (records)	012	Non D	
3205	reserved			
3206	EAS Server (for LCR et TPS)	013	TPKT	" SAESAE "
3207	reserved			
3208	H.323 Server (for H.323/MOVACS gateway)	01191	TPKT	
3209	Gateway Server for Attendant Console and Software phone on PC (TD/PC)	01190	TPKT	
3210	reserved			
3211	CSTA Server	011600	Non D	
3212 to 3216	reserved			
3217	MUFACT Server (record multiplexer with communication records and service records, with alarms)	01410030	TPKT	
3218	EAS Server for ACD (for M7403 for instance)	013	TPKT	
3219	reserved			
3220 to 3283	Internal server called by the TAPI Gateway		TPKT	
3284 to 3287	reserved			
3288	MUFACT Server (record multiplexer with only service records / alarms)	014130	TPKT	
3289 to 3290	reserved			
3291	Server MUFACT (record multiplexer with only communication records)	014100	TPKT	

11.4 Using the massive creation form

11.4.1 Considerations

This section only describes how to massively create the following data, from the blank form provided:

- External data
- Programming keys for each subscription (maximum 64)
- Secondary numbers for multi-line subscribers.

For other management functions available from the AMP, especially export/import and the associated processing operation (update of technical characteristics, modification of internal directory records, modification of external directory records, etc.), see the chapters **Export function and Massive data import** in the Aastra Management Portal Operating Manual (Document [1]).

11.4.2 Introduction

The Excel form allows massive configuration of Aastra 5000 systems during first installation.

It is advisable to keep an original copy of this file in Excel format.

This basic form comprises 3 tabs allowing respectively the massive creation of the following items:

- External records
- Key programming for each subscription (maximum 64)
- Secondary numbers for multi-line subscribers.

Each tab is saved separately in **.csv** format to generate a single, unique file per column.

The generated files will have to be imported one by one during the **Massive import** phase from the AMP menu **System/Software maintenance/Massive import**.

The data thus generated in **.csv** format will be compatible with the Aastra 5000 systems during massive import. This data may later be processed as any other parameter data type, using the **Export** function.

For a multi-site network, only one **.csv** file must be generated (from the Excel form) on the reference directory site for massive import.

This procedure applies if there is no AM7450 Management Centre on the installation.

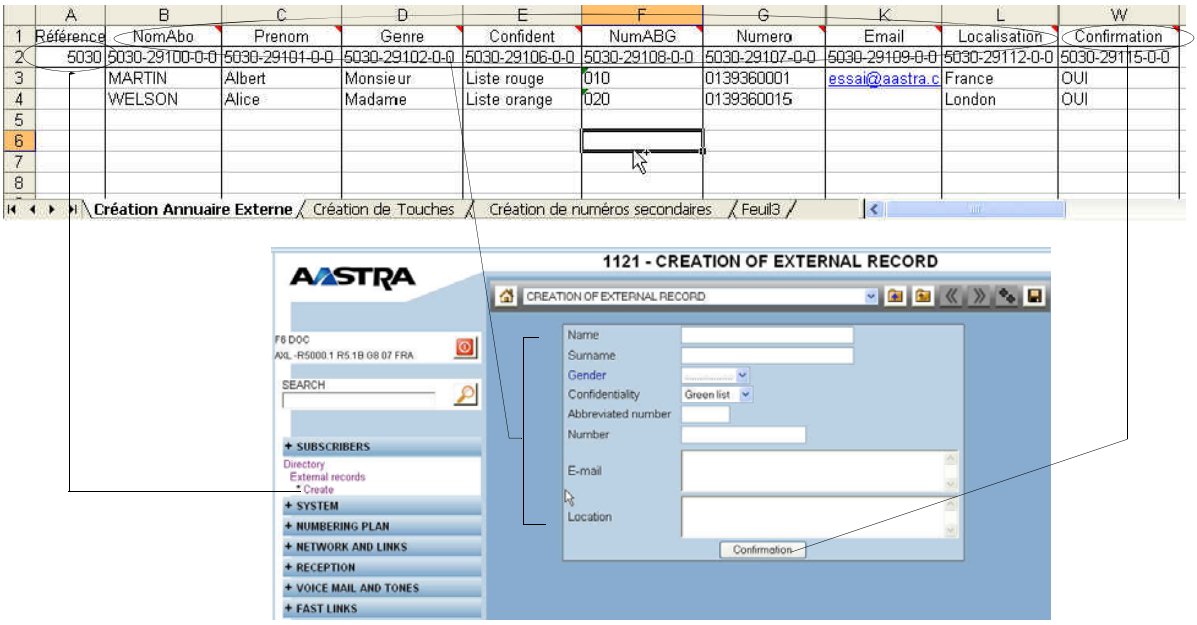
11.4.3 Structure and content of the Excel form

11.4.3.1 Structure

The file comprises three tabs:

- External record creation tab
- Selection keys tab
- Multi-lines tab

Each tab contains respectively the fields that can be completed in the corresponding AMP menu (in the example, **Creation of external record**).



On each tab:

- The cells on the first line (line 1) indicate the labels of the parameters to be exported, corresponding to the fields to be completed in the AMP.
- The cells on the second line (line 2) indicate the invariable internal codes for these parameters. These codes are used by the Aastra 5000 system software, in the corresponding menu, to interpret the values to be taken into account during import in **.csv** format. In the above example, all the parameters refer to value 5030 in the cell **A2** (internal code of the menu **Creation of external record**).
- The cells on the following lines (as from line 3) are to be filled in with massive creation parameters. A line will only be taken into account if the value YES is entered in the **Confirmation** cell for this same line.

Important : *The first two lines should never be modified by the user.*

11.4.3.2 Instructions for use

The file is created exhaustively from the parameters database available in AMP

(alphanumeric values, options list, dependences of certain data families).

All creations must be made in Excel format.

Back up systematically the latest version of these files before converting them to **.csv** format.

Use only a blank form (basic form) for each new creation meant for a new massive import. Do not re-use an old file already subjected to massive import.

For cells involving an options list, see the options offered in the menu in question so as to respect the syntax (see also the next sections).

The cells to be filled in must be in text format, to avoid random changes resulting from the default settings of Excel (010 which becomes 10 in column F in the previous example).

Depending on the system configuration, some columns do not need to be filled in (single-company, extension characteristics, rights, etc.).

Some columns and associated cells are hidden intentionally in the original form, to improve display. These fields correspond to those not modifiable from AMP menus.

The characters used must be alphanumeric characters (the same syntax as for Aastra 5000 system management).

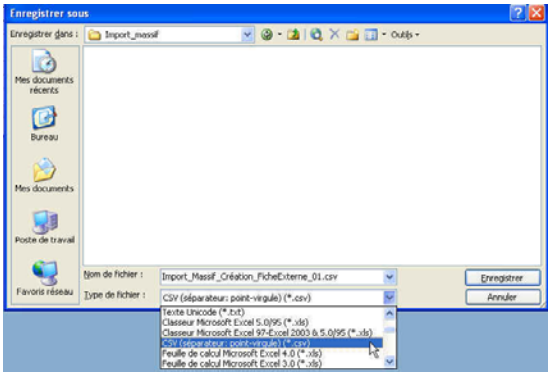
The massive creation parameters to be filled must be written within the current AMP language. (Example : in French, OUI, NON, Liste rouge. In English, YES, NO, red list, etc.).

Important : *Enter **YES** in the **Confirmation** column for each line to be taken into account in massive creation (before saving it in **.csv** format). If these cells are not filled in, they will not be taken into account during massive import.*

11.4.3.3 Backing up the file in .csv format

After filling in the tab:

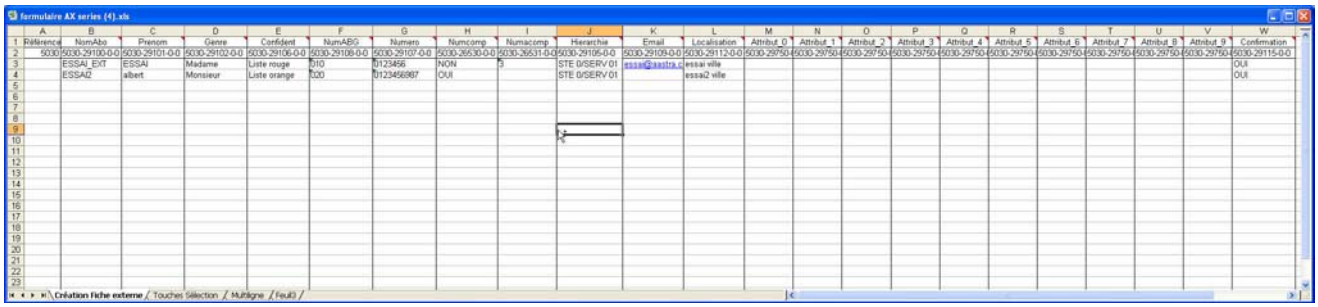
- Select **File/Save AS**.
- Name the file.
- Select the format "**CSV (separator: semi-colon) (*.csv)**"
- Click **Save**.



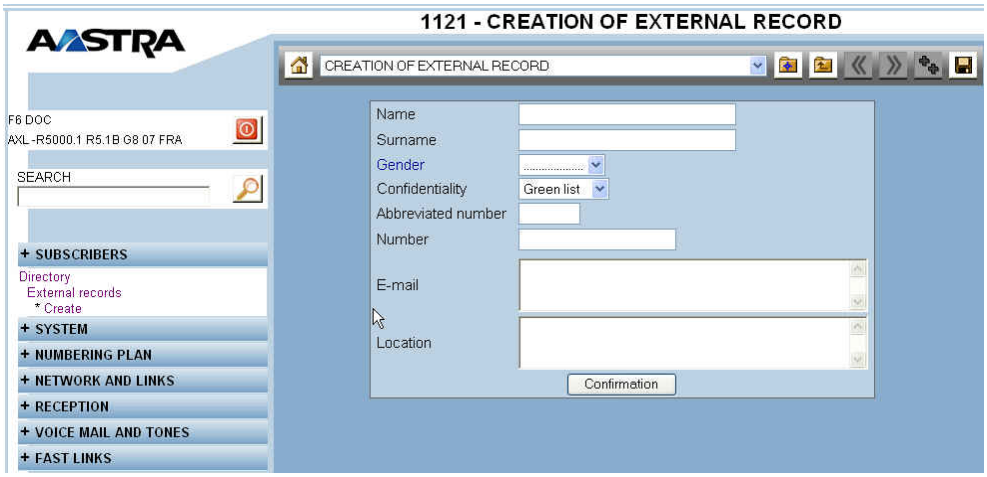
The converted file is then available for massive import from the AMP in the menu **System/Software maintenance/Massive import**.

Note : *If this file still needs to be modified before import, when re-opened, some formats will be lost, especially the numeric values starting with **0**. In this case, these cells must be completed again as indicated previously. After the modifications, check systematically the value of the **Confirmation** cells for each line.*

11.4.4 External record creation tab



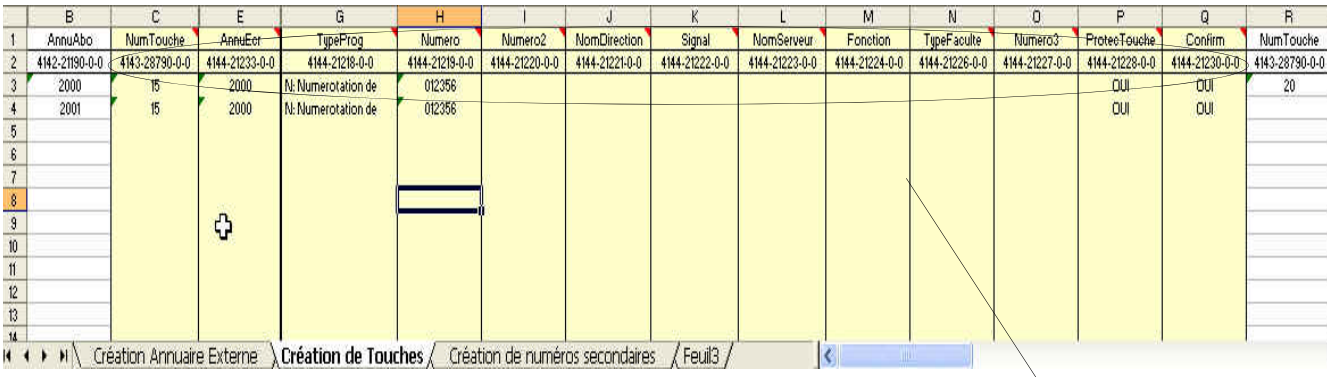
Correspondence with the filling of the fields in the menu **Subscribers/ Directory/External records/Creation of an external record**



For correspondence with the possible options and values, as well as their syntax, see Section 4.2.2 of the Aastra Management Portal Operating Manual (Document [1]).

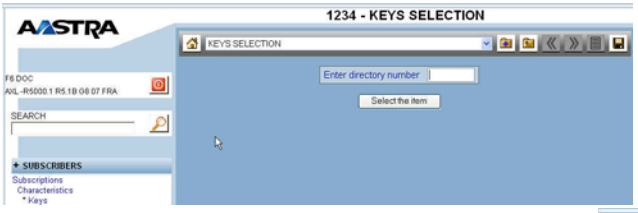
11.4.5 Selection keys tab

This part of the form is used to configure 5 keys per subscriber.

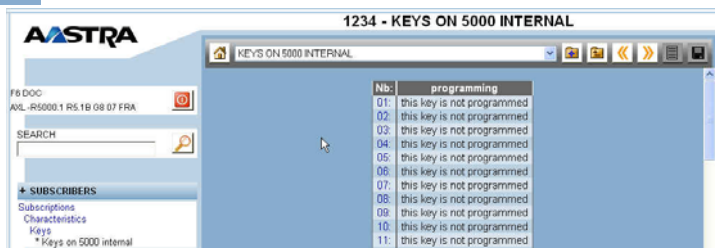


	B	C	E	G	H	I	J	K	L	M	N	O	P	Q	R
1	AnnuAbo	NumTouche	AnnuEcr	TypeProg	Numero	Numero2	NomDirection	Signal	NomServeur	Fonction	TypeFaculte	Numero3	ProtecTouche	Confirm	NumTouche
2	4142-21190-0-0	4143-28790-0-0	4144-21233-0-0	4144-21218-0-0	4144-21219-0-0	4144-21220-0-0	4144-21221-0-0	4144-21222-0-0	4144-21223-0-0	4144-21224-0-0	4144-21226-0-0	4144-21227-0-0	4144-21228-0-0	4144-21230-0-0	4143-28790-0-0
3	2000	15	2000	N: Numerotation de	012356								OUI	OUI	20
4	2001	15	2000	N: Numerotation de	012356								OUI	OUI	

Création Annuaire Externe | Création de Touches | Création de numéros secondaires | Feuil3



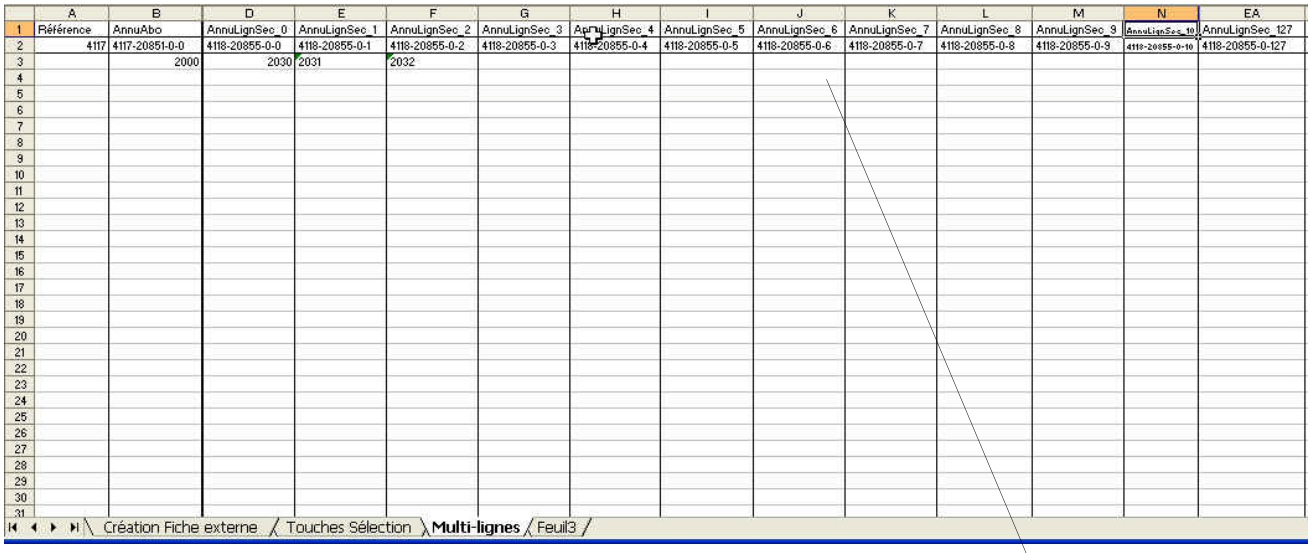
Correspondence with the filling of the menu fields **Subscribers/Subscriptions/Characteristics/Keys**

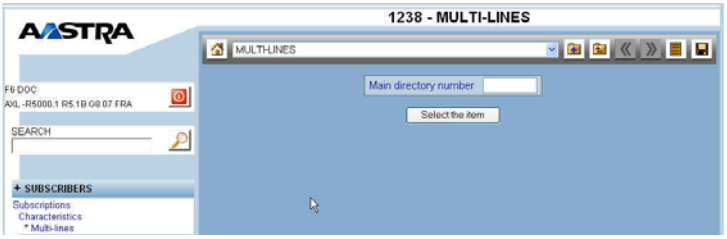

1234 - KEYS ON 5000 INTERNAL
KEYS ON 5000 INTERNAL
SEARCH
+ SUBSCRIBERS
Subscriptions
Characteristics
Keys
Keys on 5000 internal
Nb:
programming
01: this key is not programmed
02: this key is not programmed
03: this key is not programmed
04: this key is not programmed
05: this key is not programmed
06: this key is not programmed
07: this key is not programmed
08: this key is not programmed
09: this key is not programmed
10: this key is not programmed
11: this key is not programmed

For correspondence with the possible options and values, as well as their syntax, see Section 4.3.7of the Aastra Management Portal Operating Manual (Document [1]).

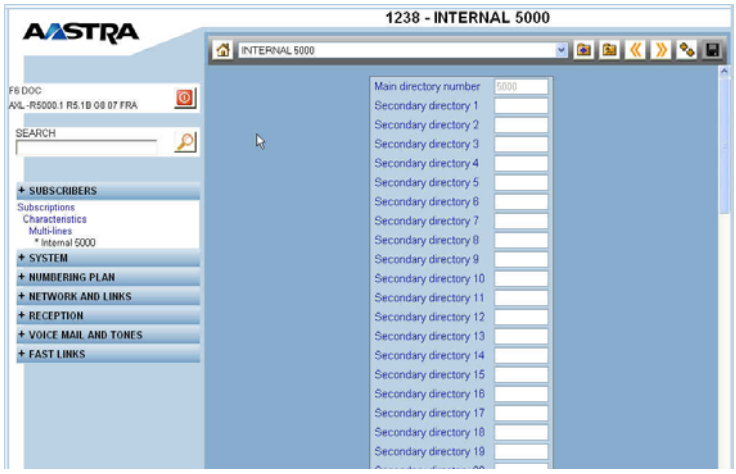
Refer also to the respective terminal documentation for information on the number of programmable keys.

11.4.6 Multi-lines tab





Correspondence with the filling of the menu fields **Multi-lines**



For correspondence with the possible options and values, as well as their syntax, see Section 4.3.11 of the Aastra Management Portal Operating Manual (Document [1]).